

ANIMAL KEEPERS' FORUM

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November 2011

The Journal of the American Association of Zoo Keepers, Inc.

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also serves as AAZK Liaison to the American Zoo & Aquarium Association (AZA)

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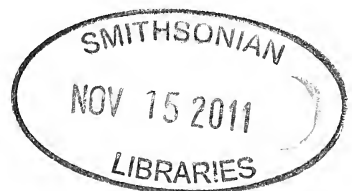
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38th Anniversary - 1974 - 2012

MISSION STATEMENT

(Revised April 2009)

American Association of Zoo Keepers, Inc.

The American Association of Zoo Keepers, Inc. exists to advance excellence in the animal keeping profession, foster effective communication beneficial to animal care, support deserving conservation projects, and promote the preservation of our natural resources and animal life.

This month's cover features "Walter and the Lion", submitted by Tim Stahl of San Diego, CA. This photo won "Best in Show" in the San Diego Chapter of AAZK's 2011 photo contest that supported the very successful 2011 AAZK National Conference. The little boy photographed here is Walter. He is a frequent visitor at the San Diego Zoo. His father is a Maasai Warrior in Tanzania, Africa. His connection to animals is uncanny and must run in his blood. He has traveled to Africa, Germany and Mexico ALL before his second birthday. Lions are one of the most majestic animals on earth yet they live in danger. The main threats to lions are indiscriminate killing (primarily as a result of retaliatory or pre-emptive killing to protect life and livestock) and prey-based depletion. Habitat loss and conversion has led to a number of populations becoming small and isolated. The lion is a venerable species having seen a possibly irreversible population decline of 30-50% over the past two decades in its African range. The conservation efforts of zoological societies around the world are crucial for these majestic animals. To keep the lions from becoming as rare as tigers, large expanses of suitable habitat with sufficient prey must be carefully protected. In disease-ridden areas, free-ranging domestic dogs must be kept away from lions or immunized. Continuous conflicts between lions and people who live near them must be mitigated. To learn more about lion conservation, check out lionconservationfund.org. Special thanks to Tim and the San Diego Chapter of AAZK for this photo!

Did you know? Our Conservation Partner Lewa Wildlife Conservancy has a resident population of lions. When you support Bowling for Rhinos, you are saving lions too, along with so much more!

Please Note New Monthly Deadline and Contact Information

Articles sent to [Animal Keepers' Forum](#) will be reviewed by the editorial staff for publication. Articles of a research or technical nature will be submitted to one or more of the zoo professionals who serve as referees for [AKF](#). No commitment is made to the author, but an effort will be made to publish articles as soon as possible. Lengthy articles may be separated into monthly installments at the discretion of the editor. The editor reserves the right to edit material without consultation unless approval is requested in writing by the author. Materials submitted will not be returned unless accompanied by a stamped, self-addressed, appropriately-sized envelope. Telephone, fax or email contributions of late-breaking news or last-minute insertions are accepted as space allows. **Phone (330) 483-1104; FAX (330) 483-1444; email is shane.good@aazk.org** If you have questions about submission guidelines, please contact the Editor. Submission guidelines are also found in the Members Only section of the AAZK website.

Deadline for each regular issue is the 3rd of the preceding month.

Dedicated issues may have separate deadline dates and will be noted by the editor.

Articles printed do not necessarily reflect the opinions of the [AKF](#) staff or the American Association of Zoo Keepers, Inc. Publication does not indicate endorsement by the Association.

Items in this publication may be reprinted providing credit to this publication is given and a copy of the reprinted material is forwarded to the Editor. If an article is shown to be separately copyrighted by the author(s), then permission must be sought from the author(s). Reprints of material appearing in this journal may be ordered from the Editor. Regular back issues are available for \$4.00 each. Special issues may cost more.

E-Mail Addresses:

You may reach Barbara Manspeaker at AAZK Administrative Offices at: aazkoffice@zk.kscoxmail.com

You may reach Shane Good and *Animal Keepers' Forum* at: shane.good@aazk.org

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AAZK website Address: www.aazk.org

BFR Website: <http://aazkbfr.org>

Scoops and Scuttlebutt

New Contact Information for Media Production Editor

As most of you know by now, Susan Chan, our current Editor of the *AKF* is retiring in January. Shane Good will be taking her place and is already working with Susan on the transition starting with this issue of the *AKF*. One of the changes brings a new monthly deadline one week earlier. Submissions are now due by the 3rd of each preceding month. Shane's contact information can be found below, and Susan can still be reached through her normal contact information until 31 December 2011.

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Photo by Jeanne DeBonis

Reminder to all Chapters on Recharter Process for 2012

All AAZK Chapters are reminded that the rechartering of all Chapters will begin in January of 2012. Rechartering packet information will be sent electronically via email to the email address your Chapter has provided to the Administrative Office. These emails will be sent the first week in January. **NOTE:** If your Chapter has changed its email contact since you completed your 2011 recharter forms, you need to notify Barbara Manspeaker immediately at aazkoffice@zk.kscoxmail.com so that your recharter materials are properly received. Recharter packets for 2012 are due back at the Administrative Office by **15 February 2012**.

Your prompt compliance in filling out the recharter packet is a critical part of maintaining our status as a 501(c)(3) nonprofit association. If you do not receive your recharter materials by early January, please contact Barb at the Administrative Office at the email address above or by calling 785-273-9149.

Did you know? There are three key things that keep AAZK, Inc. financially solvent throughout the fiscal year: Your AAZK memberships, AAZK conferences, and the generosity of Chapters towards AAZK, Inc., especially at recharter time. Please keep this in mind as you complete your recharter packets. Your Chapter donations at recharter time make all the difference for this Association.

U.S. Postal Service Stamp Helps Save Vanishing Species

Do you think tigers, elephants, rhinos, great apes, and marine turtles are species worth saving? Then you may want to consider purchasing the *Save Vanishing Species* stamp from the U.S. Postal Service. Net proceeds from the sale of the stamp will be transferred to the U. S. Fish and Wildlife Service to support the Multinational Species Conservation Funds. The program is a collaborative effort of the U.S. Postal Service, U.S. Fish and Wildlife Service, and the Multinational Species Coalition, which is an alliance of conservationists, zoos, veterinarians, animal welfare groups, circuses, and sportsmen.



The stamp features an illustration of an Amur tiger cub by artist Nancy Stahl. The stamps sell for 11 cents greater than a First Class Mail stamp - 55 cents. A sheet of twenty stamps costs \$11. The stamps can be pre-ordered at usps.com/shop.

AAZK Chapters Help Underwrite AKF Production

During the 2011 Chapter Recharter process earlier this year, five AAZK Chapters generously sent in donations to help cover the costs associated with the production of the *Animal Keepers' Forum*. We would like to thank them for their support in producing the Association's monthly professional journal.

For the November 2011 issue of *AKF* we wish to thank all of the members of the Galveston Chapter of the American Association of Zoo Keepers - *The Editors*.

Galveston Chapter of the American Association of Zoo Keepers

GCAAZK is a small Chapter that formed in 2004. We have approximately 15 keepers who are from the aquarium and rainforest at Moody Gardens in Galveston, TX. Our main focus is supporting conservation organizations locally, nationally and internationally. We have several fundraising events throughout the year, but our two largest events are Wild about Wine in the spring and s'mores sales at Festival of Lights during the holiday season. We started a new education endeavor last fall that allowed fellow keepers and animal lovers, who aren't able to attend animal-related conferences or workshops, to hear some of the leaders in the field. Ken Ramirez kicked off the annual event, An Evening of Training Talk, and two canine professionals spoke at our 2nd annual event. As our Chapter evolves, we continue to seek new ways to become more involved in the community and spread important conservation messages about animals and nature.

In 2007, we hosted the 34th Annual National AAZK Conference. For a small, new Chapter this was truly our proudest accomplishment. We are very excited to be sponsoring this edition of the *AKF*! This has been an ongoing goal for many years, but our finances were not up to par. We feel that funding for this aspect of AAZK is extremely important because this is the face of AAZK month after month. We encourage other Chapters to step up and sponsor an *AKF* issue to ease the financial burden on AAZK. Not only is this publication an unbelievable undertaking, but Susan Chan has done so with precision and quality with every issue for over 30 years. Well done, Susan!

In 2009, Galveston was hit by Hurricane Ike, which devastated the island and the rainforest exhibit. Many of you contacted us and a few of you graciously provided some personal assistance to our staff. That truly meant a lot in a time of turmoil and is a testament to the great nature of keepers. Thank you! After almost three years, the rainforest re-opened in May 2011 with stunning new enhancements for our guests. Not only are we back to normal, but we (keepers and facility) are better than ever! If you ever find yourself on the upper-Texas Gulf Coast, please come see us. Enjoy the issue!

Did you know? The Galveston Chapter of AAZK hosted the AAZK National Conference in 2007. Their conference theme was "Dive Into Something Wild". That was the conference where our AAZK Professional Development program truly took off, hosting comprehensive workshops in Elephant Management and even Oiled Wildlife Response. Graduates of the latter program even received an official OSHA Certificate.

What else happened in 2007? Jaimee Flinchbaugh of Oklahoma City Zoo set a record by raising \$31,091.00 for Bowling for Rhinos! In the process, she won the annual trip to Lewa in Kenya.



National Zoo Keeper Week also began in 2007! It all came together in Galveston!



Mr. Awesome by Mark Vassallo

This sketch is of a Crocodile Monitor (*Varanus salvadorii*) that lives in the Moody Gardens Rainforest Pyramid on Galveston Island, TX. Crocodile Monitors are highly arboreal lizards native to New Guinea. They are closely related to Lace and Komodo Monitors, and share the trademark intelligence of this group of lizards. The wild diet of crocodile monitors includes birds, eggs and small animals. These large lizards typically reach about eight feet in length and inhabit the lower canopy of mangrove swamps. These animals are Red Listed according to IUCN. The greatest threat to the survival of this species is habitat destruction and collection for the pet trade.

This particular Croc Monitor's name is Mr. Awesome. He is the first of this species to be housed in the Rainforest at Moody Gardens, that had a grand re-opening in May 2011 after Hurricane Ike damage in 2008. He is approximately two to three years old and lives in a large, open-air enclosure in the Rainforest Pyramid. Mr. Awesome has learned to recognize his keepers by sight and the sound of their voices. Mr. Awesome receives rodents and birds as a staple diet and receives enrichment items, such as eggs, hidden in the foliage of his enclosure.

This sketch was done by Mark Vassallo, Biologist II in the Rainforest at Moody Gardens (and keeper for Mr. Awesome).

Attention All Photographers - AKF Needs Your Photos

Attention all photographers, the AKF needs your photos as potential cover photos and special feature photos throughout the issue. All photos need to be high resolution, 300 dpi/ppi or greater. All photographers will need to submit a photo release form that can be found at aazk.org/animal-keepers-forum/aazk-photo-model-release-form/. Photos that clearly depict facility logos and behind-the-scenes shots will need permission of the facility to be used.

Subjects for the photos should revolve around animal husbandry, conservation, education/interpretation, professional development, significant achievements in the industry (births, exhibits, staff, etc.), and can also include some of the more humorous or unique situations that we all come across each day in our occupations. Accompanying text with each photo is strongly encouraged.

Zoo Keeper Retires after 45-Year Career

Working at Dudley Zoo for over four decades, Head of Reptiles, Graham Chilton, certainly has some tales to tell. The 61-year-old has decided to say goodbye to his beloved animals and hang up his keeper's uniform as he retires after 45 years at the Castle Hill site. Since starting work as a trainee on 29 September 1966, at age 16, Graham has worked with most of the zoo's collection of animals from the big cats, primates and elephants to dolphins and the orca named Cuddles. The keeper has also traveled the world through his job, studying pilot whales and dolphins in the Faroe Isles, visiting zoo collections in San Diego and Singapore, as well as visiting Australia seven times.

One notable expedition took place in the 1970s, when Graham spent three months in the Falkland Islands with two other keepers to bring back 90 penguins and 12 elephant seals. Graham said: "We were there for a few weeks before the boat reached us to take us home. We then had a ten-day turnaround to catch them all and load them onto the cargo ship. It took seven weeks for us to get back to the UK. We had to individually hand feed the penguins three times a day and we were the first expedition at that time to get back to the UK with all 90 penguins."

However, one of his proudest career highlights was being the first in Europe, and possibly the world, to breed a captive Nile crocodile – on 12 July 1977. Graham explained: "We made a nest for eight eggs out of straw, elephant dung and leaves and put a heat lamp over it to maintain a 90° F temperature. We kept spraying it with water to keep the atmosphere humid and then I noticed one of the eggs had cracks appearing in the shell. I didn't touch it and then after about 90 days I heard a muffled yelping noise as a baby croc began calling for its mother and cracked out of the shell. It was unbelievable. We only had one egg hatch and we named the baby Caesar. He had worldwide fame and eventually went to another zoo as part of a breeding program. Nile crocs live to around 60-70 years, so he's probably still alive."

Graham also spent many years working with the marine animals – starting at just 21 years-old. He said: "My job was to train the dolphins for the shows. It was really hard work. We had to keep testing the water, manually pour in salt and had to put scuba gear on and dive to the pool bottom each night to check for glass. At that time many zoos in the UK had whales and dolphins in the collection. These days none do and you have to specialize in marine biology to work with them."

"One incident that I will always remember is the night a lollipop stick was floating in the water. It was late at night and I was trying to get it out, when one of the dolphins picked it up in his mouth. He was playing about and refusing to give it to me and on one of my attempts to grab it from him, I fell into the pool. He then swam right into my arms and handed it straight to me. He just wanted me to get in with him and play – so that's what I did, whenever I wanted him to give me something."

Despite working with a variety of different species, Graham said his passion will always be crocodiles and venomous snakes. He said: "They are so beautiful. I don't fear them, I respect them. I would love to come back one day and see a reptile house full of crocs and venomous snakes. I had never even seen one before I started work here and I remember going home after my first day and saying to my dad I didn't want to go back as I didn't think I could work with snakes. But 45 years later, now is the right time to go. I've had the opportunities, now it's the turn for the younger keepers."

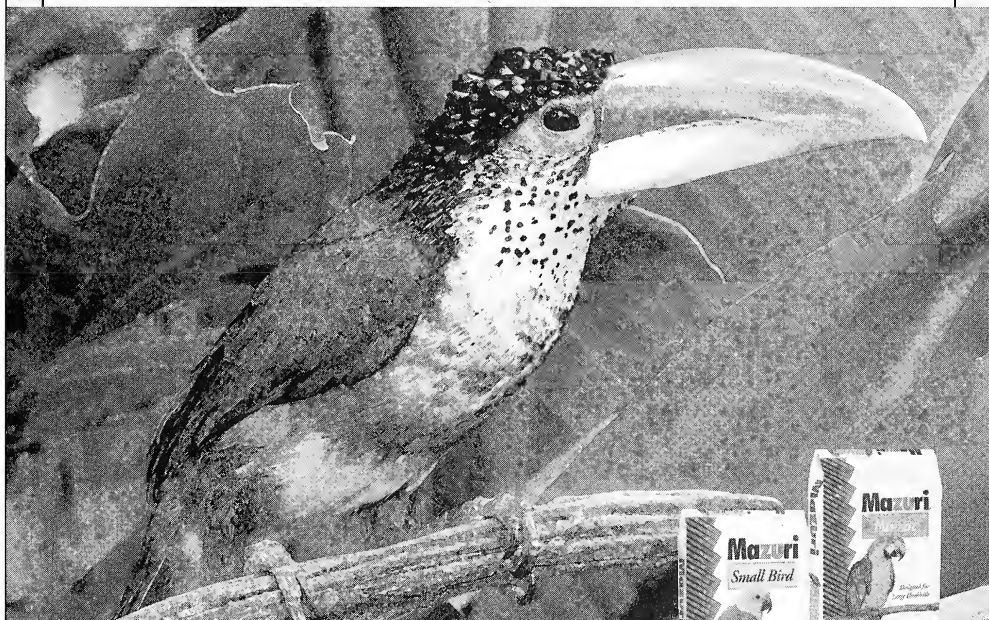
"I'm really going to miss the place. I've made a lot of friends, but you do this job for the love of the animals. I have been so privileged."

Source: *Stourbridge News*, 02 October 11, as appearing in *Zoo News Digest*, October 9-15, 2011

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Coming Events

Post Your Coming Events here
email to: shane.good@aazk.org

2012

February 6-9, 2012 - International Association of Giraffe Care Professionals - San Francisco, CA. Located at the Hilton San Francisco Financial District. For more information, check out the IAGCP's Event Page on Facebook.

February 15-18, 2012 - 20th Annual Conference of the International Association of Avian Trainers and Educators - Hosted by the Minnesota Zoo, Bloomington, MN. Topics will include avian behavior, training, husbandry, conservation, education, enrichment, and show presentation/production. For detailed Call for Papers and more information visit www.IAATE.org

April 12-15, 2012 - Otter Keeper Workshop - The 5th biennial workshop will be hosted by The Dallas World Aquarium. Any staff working with any of the freshwater species is welcome to attend. Topics will include: captive management issues, enrichment, training, water quality, health care, nutrition, diet, hand-raising, exhibit design, and lots of sharing of information between keepers. Registration is \$75.00. For more information, see www.otterkeeperworkshop.org

May 6-11, 2012 - ABMA Annual Conference - Hosted by Oakland Zoo, California Academy of Sciences, and CuriOdyssey. The conference location will be the San Francisco Airport Marriott, Burlingame, CA. See the abma.org for more info.

May 13-16 - Shape of Enrichment Regional Workshop - Hosted by Howletts and Port Lympne Wild Animal Parks, Kent, UK. For more information go to enrichment.org.

July 15-21, 2012
NATIONAL ZOO KEEPER WEEK

August 8-14, 2012 - The World Congress of Herpetology - To be held in Vancouver, Canada. For more information see <http://www.worldcongressofherpetology.org/>

August 16-19 - The 10th Annual Symposium on the Conservation and Biology of Tortoises and Freshwater Turtles - Tucson, AZ. Hosted by the Turtle Survival Alliance and the IUCN Tortoise and Freshwater Turtle Specialist Group. For more information go to turtlesurvival.org

September 9-13, 2012 - 4th International Congress on Zookeeping - Sponsored by Wildlife Reserves Singapore/Singapore Tourism Bureau. Theme: "Many Voices, One Calling". For info on sponsorship or exhibit opportunities email eo@aszk.org.au. Check the ICZ website <http://www.iczoo.org/> for latest news/information.

September 23-27, 2012 - AAZK National Conference - Hosted by the Rosamond Gifford Zoo and the Rosamond Gifford Zoo AAZK Chapter in Syracuse, NY. For more information see www.rgzaazk.org.

Upcoming AAZK National Conferences

2012 - Syracuse, NY - September 23-27

2013 - Asheboro, NC - September 22-26

2014 - Orlando, FL - TBD

For information on upcoming AAZK conferences, watch the AAZK website at www.aazk.org

Upcoming AZA National Conferences

September 8-13, 2012 - AZA 2012 Annual Conference - Hosted by Phoenix Zoo, Phoenix, AZ

September 7-12, 2013 - AZA 2013 Annual Conference - To be hosted by the Kansas City Zoo, Kansas City, MO

For more information on AZA Conferences see http://aza.org/ConfWork/AC_Intro/index.html

AAZK Announces New Members

New Professional Members

Anthony Provost, **The Wild Center (NY)**
Zach Gring, **Catoctin Wildlife Preserve (MD)**
Jackelyn Sowers, **Lehigh Valley Zoo (PA)**
Nicola Alicandro, **Leesburg Animal Park (VA)**
Sarah Friedel, **Catoctin Wildlife Preserve (MD)**
Lyndsay R. Newton, **St. Augustine Alligator Farm (FL)**
C. LeShea Upchurch, **Jacksonville Zoo, (FL)**
Katherine Gaskill, **Gulf Breeze Zoo, (FL)**
Charlotte Phillips, **Naples Zoo, (FL)**
Torree Prosser, **Ft. Wayne Children's Zoo (IN)**
Lauren Bainbridge, **Binder Park Zoo, (MI)**
Jordan Wald, **Roosevelt Park Zoo, (SD)**
Erin Kipp, **Endangered Wolf Center, (MO)**
Jeana McDowell, **Moody Gardens, (TX)**
Mark Vassallo, **Moody Gardens, (TX)**
Laura Bowen, **Exotic Feline Breeding Compound, (CA)**
Rob Steele, **Palo Alto Museum, (CA)**
Elisa Miller, **Sequoia Park Zoo, (CA)**

Renewing Contributing Members

John Rowden, New York, NY
William H. Disher, San Diego, CA
Gloria K. Kahn, Camarillo, CA

Renewing Institutional Members

Prospect Park Wildlife Center, Brooklyn, NY
Louisville Zoo, Louisville, KY
Black Pine Animal Park, Albion, IN
Ft. Wayne Children's Zoo, Ft. Wayne, IN
Northeastern Wisconsin Zoo, Green Bay, WI
Turpentine Creek Wildlife Refuge,
Eureka Springs, AR
Santa Barbara Zoo, Santa Barbara, CA
Fresno's Chaffee Zoo, Fresno, CA
Happy Hollow Zoo, San Jose, CA

**Thank you for your
membership!**



Chapter News


What's better than eating delicious, healthy food with family, friends, and fellow keepers? Earning money for your Chapter at the same time! Recently, the Greater Orlando AAZK Chapter teamed up with Sweet Tomatoes restaurant for a fundraiser. Simply by showing up with a flyer for our event at the pre-arranged times, 15% of proceeds went to the Chapter. We were able to raise \$115 that will help us with this fall's Bowling for Rhinos, and other events and conservation efforts.

By Tiffany Palumbo
GOAAZK liaison





June 4-6, 2012. The 1st International Gibbon Husbandry Conference, "The Great Lesser Ape," will be hosted by The Natural Science Center of Greensboro, North Carolina.

The conference will focus on captive gibbon husbandry and management practices, but will also encompass topics within gibbon conservation and biology. Paper/Presentation/Poster abstract submission deadline is 1 January 2012. Workshop sessions may be held in place of presentations for some topics. Please visit the conference website at: www.gibbonconference.org or contact Kim Clark at kclark@natsci.org for information and updates.



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ICZ Announces International Congress on Zoo Keeping Singapore, 9-13 September 2012

“Many Voices, One Calling”

Wildlife Reserves Singapore is proud to host, in conjunction with the ICZ, the 4th International Congress on Zoo Keeping, from September 9-13, 2012. This conference, themed “MANY VOICES, ONE CALLING” hopes to bring together keepers and zoo professionals from around the world for the objectives of enhancing the professionalism of Zoo Keepers and the welfare of the wild animals in their care.



International
Congress
on
Zookeeping
2012
Singapore

Delegates from every country have much to contribute. We encourage keepers to share their knowledge and experiences in the field of Zoo Keeping with their fellow keepers at this momentous event.

Venue

The conference will be held at Wildlife Reserves Singapore facilities including Jurong Bird Park, Singapore Zoo and Night Safari.

2nd Call for Papers

The Second Call for Papers is already under way and seeks abstracts of papers, posters & workshops on any aspect of zoo work. Oral presentations need to be no more than 15 minutes in length.

Abstracts for oral and poster presentations should be written in English, no more than 600 words long in MS Word® format. If you wish to run a workshop focused on developing zoo keeper skills, please send a short description.

Please mark ‘ICZ Abstract’ and send to: Paul Howse, ICZ Steering Committee at papers@iczoo.org

Pre and Post Conference Tours

In addition to the papers and workshop program a number of pre and post conference tours are planned including: Malaysia, Sabah and Bali. More information will be available soon.

Registrations

Registrations to the congress will open around February, 2012. For those planning a budget, registration costs are most likely to be around \$SGD550 - \$SGD600 (~\$430-\$470 US). This will include Icebreaker event, Gala Dinner, Silent Auction evening, Night Safari event, lunch and morning tea Monday – Thursday and afternoon tea on two days. Buses to the venues and return will be provided from two to three locations in downtown Singapore at certain times.

Accommodation

A range of accommodation is available in Singapore to fit most budgets. We will be recommending a list of conference hotels but you may find your own to suit.

Sponsors

Sponsors are being sought for this event. These sponsorships create opportunities to not only support zookeeping as a profession but to promote your institution, services or product to over 6000 zoo professionals worldwide. More information on sponsorship categories and benefits can be found at www.iczoo.org

Scholarships

Scholarships are available for funding attendance, including travel for keepers primarily from zoos in developing countries. To apply for a scholarship please visit www.iczoo.org to download an application form.

More Information

Further information can be obtained from the ICZ website www.iczoo.org. Updates will be made as further information becomes available. Information can also be obtained by emailing congress@iczoo.org

We look forward to hearing your MANY VOICES committing to our ONE CALLING. See you in Singapore 2012!

AAZK is proud to be a founding member of the ICZ.



AAZK Seeks New Representative to the ICZ

The American Association of Zoo Keepers is one of nine professional zoo keeper associations within the International Congress of Zookeepers (ICZ). Each of these associations has two representatives on the ICZ's Steering Committee. One of AAZK's representatives to the ICZ, Shane Good, will be stepping down from the ICZ, leaving a vacant position that needs to be filled.

AAZK seeks a qualified individual to fill this important position. The ideal candidate would have all of the skills and dedication it takes to be an AAZK Board Member, with the added ability to work within a larger Association comprised of many different associations, cultures, and philosophies. The ability to work on a very diverse team is critical. A complete job description is available upon request.

To inquire about or apply for the position, contact ICZ Coordinator Norah Farnham at Norah.Farnham@aazk.org. Applications should include a résumé and cover letter. Deadline for applications is 13 January 2012.

Visit AAZK on Facebook®

If you didn't check out our Fan Page on Facebook last month you missed some great photos and blogs from the AAZK members who attended the AAZK/PBI Leadership Camp in Churchill. Some other highlights included some great, old zoo photos from the London Zoo in 1930 and the Bronx Zoo in 1950, reports on the National Zoo's new red panda cubs and their black-footed ferret conservation program, and a press release on Oregon Zoo's \$125 million bond to expand their zoo.

Additionally, several mini-surveys were conducted, including "What is your vision for the future of zoo keeping?", "What causes are most important to you?", and "What's your favorite thing about working at a zoo?". Our favorite answer to the last question came from Pattie Beaven: "The relationships with the most amazing creatures on earth. Being outdoors. Being part of an incredible team. Sharing stories with visitors. Being the spark of passion for animals and conservation to kids..." We think that sums it up nicely. "Like" us on Facebook® today and see what's new!

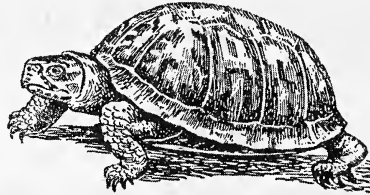
Call for Papers

For Dedicated Issue of *AKF* – CHELONIAN

We are planning in 2012 on producing an edition of *Animal Keepers' Forum* dedicated to Chelonians. We would like those interested to submit manuscripts for consideration for inclusion in this dedicated issue. Our concept for this issue would include articles both on basic Chelonian husbandry for animal care professionals with little or no experience working with this group, as well as articles relating to the most advanced techniques in captive husbandry for these species.

Possible topics might include the following:

- Chelonian Care and Management
- Chelonian Conservation
- Chelonian Field Research
- Reproduction
- Behavioral Management



Papers should be submitted electronically in MS Word only to shane.good@aazk.org. Please use Times New Roman font (10pt text body). Please put "Chelonian Issue" in the subject line of your email. Papers should be no more than 10 pages in length. Any charts and/or graphs should be submitted as separate jpeg or tiff files along with (but not imbedded in) the manuscript. Photos submitted electronically should be high-resolution (minimum 300 dpi) jpg or tiff files. Be sure to include proper photo credit and a suggested caption for each photo. Please reference the complete set of *AKF* submission guidelines at <http://aazk.org/akf-submission-guidelines/>

Be sure to also include your complete contact information including name, address, email and a daytime phone where you may be reached if we have questions concerning your submission. Also be sure to include your facility and your job title at that facility.

Deadline for submission of articles for this special Chelonian Issue is **1 February 2012**.

The Aggressive Invasion of Exotic Reptiles in Florida With a Focus on Prominent Species: A Review by The Center for North American Herpetology, Lawrence, Kansas. <http://www.cnah.org>, 28 September 2011

Richard Engeman, Elliott Jacobson, Michael L. Avery & Walter E. Meshaka, Jr.

2011. *Current Zoology* 57(5): 599–612

Abstract: Florida, along with Hawaii, has among the two worst invasive species problems in the USA, and the state is especially susceptible to establishment by alien reptiles. Besides the large numbers of established non-native reptile species in Florida, many of these species present novel difficulties for management, or have other characteristics making effective management extremely challenging. Moreover, initiation of management action requires more than recognition by experts that a potentially harmful species has become established. It also requires the political will along with concomitant resources and appropriate personnel to develop effective methods and apply them. We review the situation in Florida, including assessment of risk for establishment, and we use a subset of prominent species to illustrate in more detail the array of invasive reptile species circumstances in Florida, including routes of introduction, impacts, and potential and implemented management actions. These examples not only highlight the severity of the invasive reptile problems in the state, but they also show the diversity in resolve and response towards them and the motivating factors.

A pdf of this article is available from the CNAH PDF Library at http://www.cnah.org/cnah_pdf.asp

First Call for Papers

The Rosamond Gifford Zoo AAZK Chapter is pleased to host the 2012 National AAZK Conference from 23-27 September 2012. The Conference theme “On the Path Toward Conservation” will highlight *in-situ* conservation efforts, research projects and programs that encourage visitors to protect wildlife and wild places. We will be accepting abstracts for the following categories:



Papers:

Authors will be allowed 15 minutes for a presentation with five minutes of Q & A immediately following. Abstracts should focus on the conference theme or innovative approaches to zoo keeping including animal welfare, conservation, husbandry, education and training.

Posters:

Posters will be on display throughout the conference with a scheduled Q & A session to be determined.

Guidelines for Abstracts:

Abstracts should be no more than 250 words and submitted as a Microsoft Word® document via e-mail to submissions@rgzaazk.org.

Please include the following information:

- Name of authors and presenter
- Institution / Affiliation
- Position / Title
- Title of Work (please specify poster or paper)
- AV requirements
- Contact information (please include e-mail)

Deadline for Abstracts is 1 May 2012

Authors will be notified, regarding acceptance, by 1 June 2012. All papers must be received by 15 July 2012 to be included in the conference program.

For more information on the 2012 National AAZK Conference, please visit our website at

www.rgzaazk.org

See You in Syracuse!

VERY IMPORTANT Reminders from the Administrative Office

1. Importance of New Address Notification: We understand that zookeeping is a mobile profession and that people move, sometimes frequently. However, your making a move and not taking the time to notify the Administrative Office comes with a number of unhappy consequences. First of all, be aware that *Animal Keepers' Forum* is mailed under a nonprofit bulk mail permit and as such is **not** automatically forwarded just because you have turned in a Change of Address card to your local Post Office. The USPS is only obligated to forward FIRST CLASS mail. Also, when we receive your *AKF* back due to an unreported address change, we do not resend it to you unless you contact us and agree to pay for the postage to resend it First Class. AAZK getting returned issues because of bad addresses costs the Association money—for a regular copy it is \$0.84 for each one returned by the P.O. However, for an expanded, dedicated issue such as the July/August 2011 *AKF* on Ungulate Husbandry (172 pgs.) the cost for each issue returned for a bad address was \$5.10! As of this writing, AAZK had paid out \$173.40 in return postage on this dedicated issue alone! That is money that could much better be spent on other AAZK programs and/or publications. It is Easy to Submit a Change of Address: There are several options for letting us know that you have a new address:

- a) You may submit a change of address through the website (aazk.org) by clicking on the Change of Address link in the center of the Home Page.
- b) You may send an email with your change of address information (please include your full name and old zip code) to: aazkoffice@zk.kscoxmail.com
- c) You may call AAZK Administrative Office and leave a change of address with a staff member or on the message answering machine. Just call 1-785-273-9149. If you leave a message, please speak slowly and clearly and leave a daytime phone number in case we have any questions.
- d) Also, please let us know if you change your email address by sending us an email with "Change of Email Address" in the subject line.

2. When Using Your PayPal® Account, You MUST Keep Info Updated: If you use PayPal® to join AAZK, renew your membership in AAZK, or purchase merchandise from the AAZK website, it is imperative that you keep the information in your account current. If you join, renew or make a merchandise purchase, and you have not updated your name and/or address information in your PayPal® account settings, your merchandise and/or membership materials will be shipped to the address associated with that account whether or not it is your current mailing address. This will cause delays in receipt of your merchandise, cost the Association money in returned postage fees, and will also affect your ability to access the Member's Only section on the AAZK website. If we get either membership materials and/or merchandise returned to us because of a bad address, and IF we have a current email address for you, we will attempt to contact you for correct mailing information. If we do not have a current email address to contact you, we will automatically mark you as "Inactive" on the AAZK membership database. And how does that affect you? – 1) until we get correct mailing information, you will not receive any further issues of *AKF*; and 2) the next time you attempt to login in to the Member's Only section of the AAZK website, you will be denied access and will receive an email saying that "your account has been suspended". Also, please be aware that a NAME CHANGE can produce the same results if we do not have your current name in our database.

So, as you can see there are some very inconvenient and costly consequences for not keeping your current address information up-to-date. Please help us out by letting us know when you make a move and always remember to update your PayPal® account settings when you have either a name or address change. Doing this will make life a whole lot easier for all of us. We want to provide you with the very best in membership service and your cooperation to help us do just that is sincerely appreciated. - *The Administrative Office Staff*

Bowling for Rhinos Aims for Record Year

Dear AAZK Chapters,

As you know, we will soon be completing the 2011 Bowling for Rhinos fundraiser. Our goal was \$500,000 and to date we have raised \$234,554. This is a considerable amount of money and will go a long way toward supporting this cause. Thank you to all the Chapters that participated this year and contributed to our success.



We need your help in this new fundraising year. We have calculated that we could easily reach our \$500,000 goal if every Chapter participates. Each Chapter would only have to raise \$6000.00 over the course of the following year. We know that we are in difficult times so we have to be creative in our fundraising efforts. We know that \$6000.00 is a lot to raise but any amount is helpful at getting us to our goal. Some ideas that have been tried and been successful include: Bowling for Rhinos, Wii Bowling, Rummage for Rhinos, Rock N' for Rhinos, bake sales, reverse raffles, wings and suds, car washes, dances, walk a thons, behind-the-scenes tours of your rhino facilities, and personal appeals for donations, to name a few. Clearly your efforts can include more than just bowling. We will be happy to help you come up with ideas if you need help.

Remember ...

-The five rhino species are the "Umbrella" species. By saving the rhinos' habitat we are saving whole ecosystems including hundreds of species of mammals, birds, insects, reptiles and plants. We protect 1.5 million acres of land in Kenya and 2300 square miles in Indonesia and support life for the people in the surrounding communities.

-Lewa is home to not only rhino but elephant, lion, leopard, cheetah, the endangered sitatunga and 25% of the world's population of Grevy's zebra. The habitat we protect in Indonesia is home to not only rhino but Sumatran tigers, sea turtles, clouded leopard and siamang just to name a few.

-Through Action for Cheetahs in Kenya we are saving the cheetah and wildlife habitat through research, awareness and community participation in various regions including the community conservation areas within the Northern Rangelands Trust - adjacent to the Lewa Wildlife Conservancy.

Conservation cannot wait. If we do not act today, it WILL be too late. Poaching pressure is the most intense it has been in the past 30 years. There were 65,000 black rhino in 1970. By 1990, there were only 2,000. Today, due in part to organizations such as AAZK, their numbers are back up to 4,000. We need everyone's continued support to win this battle against poachers.

If you would like more info please see the following websites:

Bowling for Rhinos – www.aazkbfr.org

International Rhino Foundation - www.rhinos-irf.org

Action for Cheetahs – www.actionforcheetahs.org

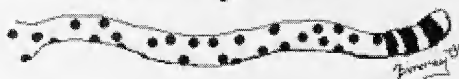
Lewa Wildlife Conservancy – www.lewa.org

If you would like help in running a Bowling for Rhinos bowling event, Detroit AAZK has a 'how to' page on the Bowling for Rhinos webpage -http://www.aazkbfr.org/docs/BFR_Detroit_howtoholdevent.pdf. Also, we will be more than happy to help you with ideas or getting you in contact with other AAZK Chapters near you for help. We all care about the animals we take care of. This can and should be a fun way to demonstrate that caring.

Yours Truly,
AAZK, Inc.

The AAZK Behavioral Husbandry Committee Presents

Training Tales...



Where you can share your training experiences!

*Training Tales Editors – Jay Pratte, Omaha’s Henry Doorly Zoo;
Kim Kezer, Zoo New England; and Angela Binney, Disney’s Animal Kingdom*

Injection Training 2.0 North American Raccoons (*Procyon lotor*)

By

*Jennifer Gale, Animal Enrichment Keeper
CuriOdyssey at Coyote Point, San Mateo, CA*

Training captive animals to receive vaccinations cooperatively is a goal of many animal keepers. Cooperative operant conditioning helps to develop trusting relationships with keepers, lessens stress on both animals and keepers during medical procedures, and can enrich the animals by providing them the opportunity to learn and choose to participate in reinforcing behaviors.

The necessity to train our 2.0 North American raccoons (*Procyon lotor*), Lancelot and Merlin, became clear when rabies (every three years) and distemper (annually) vaccinations weren’t being reliably delivered with the use of an injection pole handled by our veterinarian. Sometimes the needle would bend resulting in only half of a dose being given, or the needle would not stay fixed onto the injection pole, creating a hazardous situation for the raccoons having the opportunity to play with or chew on the syringe and needle while keepers would attempt to get the syringe back by any means possible. This usually resulted in more fear and distrust on the part of the raccoons.

September 2007: After watching a vaccination session go wrong, I decided to come up with a solution for all future injections for the eight-year-old raccoon brothers, Lancelot and Merlin. The question was: How could I create an injection chute at little to no cost? I began researching on many of the zoo keeper websites and newsletters (AZA, ABMA, AAZK) and decided to create a vertical chute like one I had seen built horizontally for otters using a large PVC pipe cut in half and attached to the caging. Instead of purchasing a large PVC pipe, I searched around our Keeper Building for free supplies that would work. I found a pile of old metal mesh pieces and decided that because it was pliable and free, I would make it work. I knew that it wouldn’t be a permanent fixture, so I was able to use duct tape to protect the raccoons from the edges of the mesh and found cable ties and four carabineers from old staff uniforms to attach the mesh “chute” vertically in the corner of one of the raccoon indoor runs.

Desensitizing to the new chute was the first step



The wire mesh chute with a raccoon entering from the bottom

Photo by Megan Hankins, Animal Keeper, CuriOdyssey

toward the final goal of reliable cooperative injections. I was able to move through the process fairly quickly due to the fact that the raccoons were accustomed to their nightquarter's furniture being changed and redesigned on a daily basis by Keeper staff. The first step was attaching the chute to the inside corner of the run and allowing the boys to look at it, smell and touch it, which I would bridge and feed for, using their daily diet (Lancelot also enjoyed sitting on top of the chute).

Once Lancelot and Merlin had no fear of the new object, we took the next step. The two raccoons were separated so that I could focus on one at a time. Baiting through the fence would be the easiest way to get them near the chute while being quickly reinforced. I began with Lancelot because he tended to be more confident with new things in his environment and that would allow Merlin to watch and possibly follow in Lancelot's footsteps. I was able to use previously trained hand targets through the fence to move him around the chute, and bridged and fed him pieces of his daily diet. Then I began dropping his reward through the fence into the chute area where he could choose to reach under the chute and grab the reward. Once he was comfortable reaching under the chute I began placing his food reward closer to the corner where he would eventually need to have his head under the chute to reach it. Next I used hand targets to get him to climb up the fencing around and over the chute as well as down into the chute space. I wanted him to understand that if he was ever nervous he could escape the chute either through the top or the bottom.

It quickly became clear that he preferred going into the chute from the bottom so I went with that.



Hand cues were used to position the raccoons.

Here is the sit cue.

Photo by Megan Hankins, Animal Keeper, CuriOdyssey

I was able to create an "in" Sd by having him follow my hand targets (protected contact) from outside the chute into the chute, and then an "up" Sd with a hand target to get him to a standing position. Then I introduced a "sit" Sd by having my arm swipe from being vertical to a horizontal position that he would follow and be bridged and rewarded for once he was sitting. Luckily, he automatically sat with his right hip resting against the fencing and on the edge of the cement foundation of the caging which was exactly where I would need him for injections, so a "jackpot" was definitely in order. Once the "in," "up," and "sit" behaviors were established, I began to extend holds while he was sitting. This was more of a challenge with Merlin because he had trouble sitting still; his paws were always reaching or moving but with careful bridge timing and reinforcement, we were able to extend his holds.

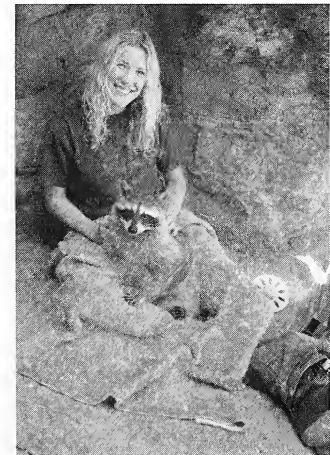
The next step was getting them desensitized to my hands and objects moving around outside of the caging while they sat inside the chute. I started with the raccoon sitting on a hold and moving my left hand around near them and rewarding them for no reaction. Over time I brought out the pen and the syringe to be sure that they could focus on holding while things were happening near them. Once it was time to touch, I always used a verbal "touch" to make sure they knew it was coming, and bridged and fed when there was no reaction to my finger "touch", and moved toward pinching their skin. I slowly desensitized the tip of a pen on their hip, a blunted needle and finally the tip of a sharp needle. Once I was confident that they would go in the chute, stand up, sit and hold through varied training lengths and behaviors per session, I started

poking them with the needle and giving a huge jackpot for little to no reaction. I understood that a small flinch would be part of the process of getting a needle stuck in their hip so unless they pulled away, they were rewarded well.

October 2008: Finally, we took the big step of having the vet do the actual poke. Because we are short on time, and don't have an on-site vet, it was just easier to continuously feed during the actual poke and vaccinations to get the job done. I had incorporated the other keepers in some of the training to act as the vet, and the vet herself also had participated in a few sessions so we could get an idea of how well it would work. When it came time for the vaccination, Lancelot (who always seemed to be a step ahead of Merlin) did great while the vet gave the quick injection and I continuously fed him in the chute while he held. However, Merlin was a little less stationary and pulled away slightly during the injection but... it was a success! There was no aggression, no injection pole was needed and the raccoons weren't running around with syringes!

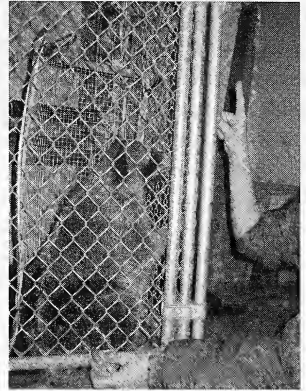
Now, the lessons learned:

1. Time flies. After successfully vaccinating the raccoons with this new training method, I felt so accomplished that I forgot to keep up the behavior as often as I should have. Fortunately, after reviewing the behavior with the raccoons in advance of their next vaccination, there were no issues.
2. Food rewards: If I gave them a big piece of meat (mouse) they would take it out of the chute to eat, so I started to cut up the meat or reward them with their daily diet of kibble, fruits and vegetables.
3. Training plans are impermanent: During the training process I incorporated other keepers to act as the vet and the vet was willing to participate in the training, but we found that the raccoons were the most reliable when I did the injection myself while being supervised by the vet. Therefore, I did the subsequent vaccinations with the vet watching.
4. Different animals mean different levels of focus: Training the same behavior with two separate animals resulted in a bit of a learning curve. I was able to move forward quicker with Lancelot because he was calmer on holds and able to pick up and follow my commands swiftly. Merlin, on the other hand, was always a much more anxious and grabby raccoon, so really focusing on calm holds without fidgeting became an endeavor on its own.



The author with Merlin.

Photo by Megan Hankins, CuriOdyssey



Needle desensitization training in the stand position

Photo by Megan Hankins, CuriOdyssey

5. Other applications: Creating a trusting relationship through positive reinforcement training of these raccoons allowed me to do more than I had ever expected. Because they now associated me with rewards, I began socializing with them free contact which built upon our level of trust. When Lancelot suddenly became ill and stopped eating about a week before he died, he trusted me to give him fluids and injections with no issues and I was with him in the hours before his exploratory surgery and eventual euthanization.

In conclusion, injection training our raccoon brothers has been my proudest accomplishment yet. Not only did the raccoons have new opportunities to learn and be rewarded, but vaccinations were no longer a stressful event (except for the pressure I put on myself). Vaccinations were given smoothly and reliably and most importantly, the raccoons finally had keepers they could trust and develop relationships with. At this point in time, I am able to stick a needle in Merlin one minute and have him relaxed in my lap the

next. And thanks to building a relationship with keepers, Merlin now has the opportunity to socialize with all of us, allowing us to be sure that he isn't lonely or depressed without his brother Lancelot.

BHC Comments by Angela Binney:

Sharing this project with our readers is exactly what the BHC had in mind in developing the Training Tales Column. Although the approximations for injection training are quite similar among species (positioning logistics, keeper/animal safety, procedure desensitization, positive reinforcement) each individual animal, barn set-up, and animal care team is unique. Sharing success stories such as this one not only provides logistical solutions that may aid us in addressing challenges, but it also fosters inspiration to think outside the historical norm for our own circumstances and to move forward with our goals to continuously enhance animal care programs in the zoo community. Congratulations, Jennifer, on your multifaceted successes and thank you for telling your training tale!

Parting Thoughts from Some of Our 2011 AAZK/PBI Leadership Camp Graduates

I'm leaving Leadership Camp with ...

Victor Alm, Oakland Zoo: The realization that I need to be a leader in the campaign to change minds, habits, and lifestyles, but I'm not in this alone. We'll be there to support each other and help each other after we leave Churchill.

Philip Fensterer, Oregon Zoo: The time spent in camp—sharing space, committing as a group to the “no shower challenge,” having time to talk—all this and more allowed for not only new connections but honest bonding. The shared passion and common goals are energizing and motivating.

Jennifer Funk, Pittsburgh Zoo & PPG Aquarium: I feel confident, inspired, and motivated. Before coming, I was really nervous that this was way out of my comfort zone, and that I could never communicate this message to people. I can honestly say that I feel like a different person!

Tammy Jo Hill, Memphis Zoo: The confidence (underscored!) to inspire and change others with the mission that is assigned to us.

Amanda Ista, Milwaukee Zoo: A renewed sense of purpose. I've always had an interest in conservation and environmental issues but it's hard sometimes to stay motivated. Leadership Camp brought back the motivation. It won't be easy to forget what we saw and learned here.

Erin Tully, St. Louis Zoo: I learned about the real issues/myths/misconceptions concerning polar bears and their habitat—and how to be a better leader. I can't tell you how much it means to me to be deemed an ambassador for these animals.

Hunter Veeneman, Louisville Zoo: A clear vision of what I need to do in order to motivate, facilitate, and demand changes in my community.

Melaina Wallace, Disney's Animal Kingdom : Seeing polar bears in their wild habitat—some so thin that they might not make it to freeze-up—was eye-opening...



Polar bear sow and cubs in Churchill, Manitoba, Canada.

*Photo by Carolyn and Robert Buchanan
Polar Bears International*

Managing Meerkat Reintroductions: Keeping Peace in the House

By

Stephen Schulze and Kenton Kerns, Small Mammal House Keepers
Smithsonian's National Zoo, Washington, DC

Introduction

The reintroduction of an individual meerkat (*Suricata suricatta* sp.) to its family group, once it has been rejected and driven out, is notoriously difficult. Carelessly managed, reintroduction can result in severe cage mate trauma or death. For this reason, many zoos with meerkats in their collections wind up with rejected individuals living in isolation, a poor situation for a social animal and a strain on zoo resources. The Small Mammal House at Smithsonian National Zoological Park has had three instances of successful meerkat reintroductions, using a strategy of protected proximity and rotational pairing of non-aggressive members from the group with the ostracized individual. Exhibit design, common sense, and conscientious observation all contribute to successful management of this delicate process.

Natural History

Suricata suricatta siricata, the slender tail meerkat, belongs to the family *Herpustidae*, and is a highly socialized species of mongoose. Its habitat ranges throughout the southern Kalahari Desert, including areas of South Africa, Botswana, Namibia and Zimbabwe. This is a mongoose adapted to a dual environment. The summer months (October to April) bring intense heat, but may also offer short periods of rain and a brief abundance of plant and insect life. The dry winter months (May to September) bring shorter days and cooler temperatures, but offer fewer and scarcer resources across the grasslands.

Accordingly (we speculate), meerkat strategies for breeding and population control relate directly to an environment that alternates scarcity and abundance. Females compete for dominance within a family, and theoretically only the alpha pair breeds. To preserve their breeding prerogative, alpha females might drive rival beta females from the group, permanently or temporarily. (Beta females, rival or not, do manage to breed, some by meeting roving males from other meerkat groups and some by copulation with beta males within the home group.) Infanticide between rival dames is common and can cut both ways within a family, with alphas killing beta offspring and betas killing alpha litters, attempting then to substitute their own offspring under alpha care. These behaviors carry from the wild into captivity and may strongly challenge the stability of a captive group.

Provenance and Early Captive History of Small Mammal House Group

The six adult individuals that originally comprised our current collection of meerkats were wild-caught, possibly trapped for removal from private property. Beyond their wild origin, we know nothing of their provenance. We had to guess their age(s), settling on a mean of four years, given estimates from various sources. Based on the voluntary separation of one female individual from the group, we suspected that they were not trapped as a cohesive family, but that the one female, and possibly a beta male, were introduced upon capture. The stress of capture and transport might account for the relative bonding of the six while in quarantine and upon release into their exhibit space.



Meerkat Group at the Small Mammal House
Photo by National Zoo

The group was reported to have been skittish and reclusive throughout their 30-day quarantine period, which ended

11 April '06. However, within several days of occupying their exhibit, the group was active on the surface throughout the day and engaged in play, social digging, and foraging behaviors. Well within a week they were acclimated to the proximity of a keeper at their holding space with the door open, eagerly feeding on mealworms lightly scattered by hand. Inter-adult aggression had been reported first on 6 July '06, and it intensified with intervening lulls throughout the month. All of the aggression that we observed at that time was female to female. Males were not observed to have taken part in female hierarchal challenges or alpha female assertions of dominance. Indeed, they behaved as if utterly indifferent. Pup vocalizations were first heard 6 August '06, 103 days after introduction to the exhibit. These first offspring were almost certainly sired and birthed by the alpha male and female couple, respectively named M'bira and Kora.

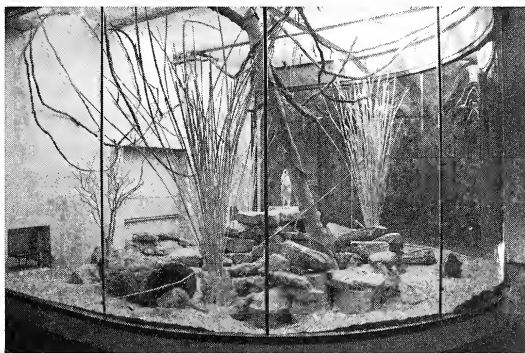
The reintroduction of an individual meerkat to its family group, once it has been rejected and driven out, is notoriously difficult.

One incident of serious aggression was closely observed on 25 July '06 involving Kora and a beta female acting as her ally against a third beta female who proved to be pregnant. The primary attacker was not Kora but her beta ally. Together they harassed the beta from opposing sides snarling, growling, and barking. The technique of attack involved sidling or backing toward the opponent, maneuvering until she was distracted enough by Kora for her ally to whirl and bite.

The two incidents of reintroduction that we will relate involved Kora and Baya, one of her female offspring (born 2 Feb. 07). By May of '09 the composition of the family group had changed dramatically from its original configuration, consisting now of five members: the original alpha pair (M'bira and Kora) and three of their offspring from two separate litters (male Ngoni born 2 Feb. 07, and female Baya and male Dogo born 9 May 07).

Exhibit Design

The exhibit provides three types of space for the group: a tunnel system, a surface foraging area, and two off-exhibit holds, one for feeding, the other a toilet area. The tunnel system consists of sections of joined four-inch PVC drainage pipe (corrugated, black) forming one main, semicircular corridor approximately 24ft. length that branches into several lesser corridors, all but one leading to a surface opening. Having multiple entry/exits enhances the groups' sense of safety. The sole terminal corridor leads to the group lair, a fiberglass hollow that resembles a large rock. Stone blocks line the exterior of the tunnel system and hide it from sight. Large stones are piled high in several places, providing lookout locations for the group. In the center of the exhibit, forming its point of focus, is a half igloo structure of stone. The substrate consists of sand, plenty enough to dig and sift through, but nowhere deep enough to tunnel into. Several logs, some hollow, some solid, add interest and variety.



Meerkat exhibit from the public side
Photo by Meghan Murphy

The exhibit is situated below a sizable skylight. High wind, severe weather, and passing birds consistently attract the meerkats' attention and help to simulate a realistic environment with natural stimulations. Holding spaces are located on either side at the rear end of the exhibit, with access to

them regulated by guillotine shift doors. Each is roughly a four-and-a-half-foot cube. Meerkats mark their territorial parameters with their feces. Not surprisingly, their toilet area is of their choosing, as far from the lair as possible, located in the holding, left of the entrance door. The right holding contains food and water.

Incident One

No major incidents of aggression occurred in the main meerkat group since October 2007. By this time, both Kora and her beta daughter Baya were receiving six-month contraceptive implants throughout the year to keep the group stable at five individuals. On 13 May '09, Kora was implanted with a new hormonal contraceptive injected subcutaneously between the scapulas. The implant was expected to prevent pregnancy for approximately two years. A few days after implantation, a weeping lesion was observed at the intrascapular site. Kora was quickly isolated, and under veterinary examination the rejected contraceptive was removed. The lesion was further opened and flushed to clean the wound and prevent infection, and a new implant was placed caudally to the original site. Once Kora recovered fully from anesthesia, she was returned to the group. No more than three hours passed between her removal and return. No aggression was seen immediately.



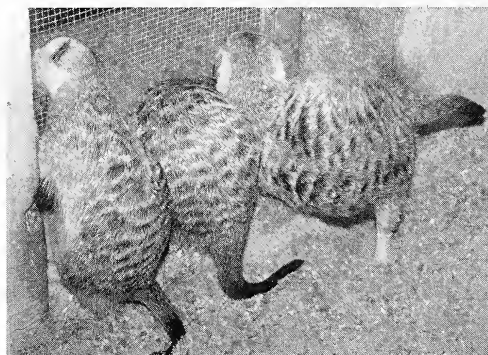
Implant site on alpha female during first incident

Photo by Kenton Kerns

Later that afternoon during feeding, keepers noticed Baya scent marking one of the entrances to the tunnels and blocking Kora each time she attempted to leave the tunnels. When Kora did finally emerge, Baya attempted to tear at the open wound (the original injection site) that was now bleeding. Kora again retreated to the tunnel. Baya pursued her and soon re-emerged looking as though she had an earthworm dangling from her jaws. Fearing it to be a strip of flesh from Kora's lesion, we decided to immediately remove Baya and isolate her from the group by means of a wire mesh screen secured between the exhibit space and the food hold.

Keepers were unable to successfully separate the animals while they were above ground. They entered the exhibit, removed the rockwork façade, and began to systematically dismantle a portion of the tunnel system. The segmented structure of the system proved useful, as we were able to isolate the group within a single ten-foot section, plug one end, then detach the other and plug it in turn. The entire section was removed to a secure, smaller space. Baya was safely netted, and then one by one the other meerkats were examined for wounds and released. Kora's wound looked clean, with only a superficial tear, and she too was released with the group. Baya was moved to the food holding with the mesh introduction screen overnight.

The meerkat group stayed underground for the next few days, no doubt stressed by the structural disruption of the exhibit and the need to repair it. The only member to emerge was Kora who vigorously scent marked around the mesh screen separating her from Baya. For the first two days of her isolation, Baya clawed, scratched, and bit the mesh screen in an attempt to reunite with the group. This behavior gradually slowed until she sat next to the screen showing no aggression. There seemed to be a correlating decrease in scent marking by Kora.



Meerkats on exhibit scent marking the intro door

Photo by Meghan Murphy

Once both females' aggressive behaviors abated and the group on exhibit had resumed normal activity above ground, we decided to move forward with a reintroduction. On the 24th, four days after the original aggression, beta male Ngoni was introduced to the beta female in holding. Ngoni paid no attention to Baya and was more concerned with his new-found banishment from the group. He spent nearly two hours attempting to break down the mesh screen while Baya looked on calmly. Keepers separated the two and released Ngoni back into the exhibit without incident. Beta male Dogo was rotated in with Baya the next day and the same results were seen: Dogo was most concerned with breaking down the mesh door while Baya watched. After two and a half hours Dogo was released to rejoin the group. During each introduction, members of the group on exhibit approached the mesh screen to observe the newly "trapped" meerkat. Some would assist in scratching the barrier. No inter-male aggression was seen at any time.

On the 26th, keepers once again introduced Ngoni to Baya in holding. After observing no aggressive behavior by any individual, it was decided that both would be allowed to rejoin the group. Keeper staff were ready to separate animals immediately if needed. Baya was sniffed by the group, peaceably welcomed, and spent most of the morning underground. During afternoon feeding she emerged and foraged with the rest of group. No further aggression was seen until September.

Incident Two

On 16 Sept. '09 Kora was separated from the family group for her third contraceptive implant after a previous one had been rejected (her second incidence of contraceptive implant rejection). Keepers anticipated the probability of aggression upon her return and devised a pre-emptive plan to manage it.

The three males were isolated from Baya and kept together in holding. Baya was given access to exhibit space and the family lair. Kora was returned to SMH after a separation lasting approximately three hours. She was placed in a holding space separate from the males, again with a wire mesh screen secured between her space and the exhibit. It was important to allow visual, auditory and olfactory contact between all family members. No threats of aggression were observed. After one hour, Kora was released into the exhibit space with Baya. No aggression was observed or heard between the two females. However, once the males were released, beta to alpha aggression between the females erupted immediately and Kora took refuge underground. Tunnel entrances were heavily scent-marked from the outside, especially by Baya, and as in the first incident Kora was kept from emerging. This time Ngoni joined his sibling Baya in her aggression, showing a new aspect of his character, as he had previously appeared consistently beta in temperament and wholly unaggressive. We could not determine that M'birra played any role in Kora's defense.



Implant site on alpha female
during second incident

Photo by Kenton Kerns

To separate the animals the exhibit again had to be broken down. Again the group was herded into an end section of their PVC tunnel and trapped within for transport to a secured hold. Baya was netted and isolated in a flight kennel until the others were released into the exhibit area. A screen was set in

place and Baya was kept in the hold for another undetermined period of separation. Quite possibly, she remembered her previous experience in isolation as she expended little energy attempting to claw

***With sensible management, it is possible
to reintroduce ostracized female
meerkats to their family group.***

through the screen. As before, individual males were rotated into her company throughout the period of confinement. She showed little stress.

Due to a shortage of staff and a lack of ability to monitor the meerkats dependably, Baya was not reintroduced to the group until the morning of 22 September. Immediately prior to reintroduction, forage was scattered in the exhibit to provide plenty of distraction. Baya then rejoined the group without aggressive incident. All five spent much of the remaining part of the day under ground with little or no vocalizing heard. All five peacefully appeared in holding for their afternoon feeding.

This group remained stable until 28 February '10, when temporary displacement from their exhibit space triggered the ostracizing of both parents, M'bira and Kora. Keepers were able to reintroduce the females, but for the first time we saw fierce inter-male aggression, siblings against sire. Parents and offspring were ultimately split into two exhibits.

Conclusions

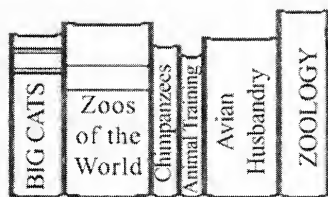
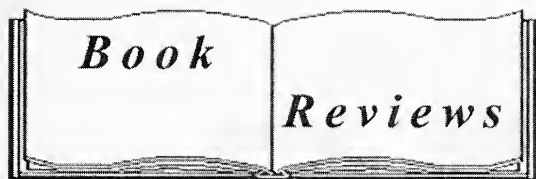
With sensible management, it is possible to reintroduce ostracized female meerkats to their family group. We are unsure of what factors played a roll in the successful reintroductions; the relatedness of the animals, the aggression only taking place among the females, the availability of holding for extended "time-outs," or any other number of variables. However, we have identified certain points that we feel could be used in general meerkat reintroductions.

- Stay vigilant. Never become complacent regarding the social stability of your meerkat group, especially if breeding is permitted.
- Design your exhibit so that the meerkats are reachable if necessary, and provide proximate holding space.
- When aggression occurs, remove the aggressor.
- Allow visual, auditory and olfactory contact between the group and the removed individual.
- Rotate friendly group members in with the isolated female, preferably males, one at a time.
- Maintain life as usual with the group.
- Consider reintroduction only when all signs of aggression and ostracization have abated.
- Provide an opportunity for positive group activity as the reintroduction occurs.

Acknowledgements

We would like to thank:

- The Department of Animal Health staff for their flexibility.
- Meghan Murphy for use of her images of the exhibit.
- The amazing Friends of the National Zoo volunteer keeper aides and interpreters for their assistance in observing these animals.
- Our Small Mammal House colleagues for their help and ideas.



Understanding Animal Welfare: The Science in its Cultural Context (UFAW Animal Welfare)

By David Fraser
Oxford : Wiley-Blackwell Publication
© 2008 Description 324 pp.

Review by Bob Cisneros, President, AAZK

The well-being of captive animals is an imperative that animal care professionals world-wide share. In his book *Understanding Animal Welfare: The Science in its Cultural Context*, David Fraser takes a historical framework of modern animal welfare. This outlook provides past views of empirical, ethical, and cultural perspectives that have shaped today's stance on animal care.

The book is divided into three sections. The first section covers the cultural context from which modern welfare views arose. Fraser covers the role of animal welfare as far back as biblical times and ancient Greece, citing many passages that provide the cornerstone for a myriad of viewpoints that have shaped today's modern thought on the subject. Behind these value-based positions underlie many different positions on what is most effective animal welfare.

The second section covers the methods of animal welfare science. Particularly noteworthy are the author's coverage of the physiology of stress and pain as well as the role of science with regards to identifying abnormal behavior and determining its origin. Within this section, Fraser asks the question:

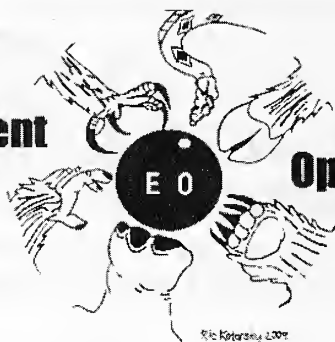
*"If we keep animals in a way that does not fully match their adaptations,
what kinds of animal welfare problems may arise?"*

These welfare concerns present a challenge for all of us in the animal care field. At any one time we are examining the effective states of our animals; exhibits and habitats are modified, allowing animals to exercise some form of adaptation. Any kind of change presents an issue of adaptation for our animals.

The final section of the book involves drawing conclusions about animal welfare and the logic involved in this decision making process. According to the author, different perspectives may point to different problems, leading to different solutions, completely different from what some other group or culture may determine regarding animal welfare. Here the author places a very strong emphasis on the role that both facts and values play at determining policies regarding animal welfare.

Understanding Animal Welfare: The Science in its Cultural Context is a valuable text for any zoo library. While this book may not be suggested reading for all animal care professionals, it is very appropriate for those either involved with or interested in animal welfare issues and the integration of these principles. For those not interested in Fraser's collection of historical-ethical perspectives, the chapters relating to stress, effective states, and natural living will find a place of relevance for all animal care professionals.

Enrichment



Options

EO Editors -

Julie Hartell-DeNardo, Saint Louis, MO and Ric Kotarsky, Tulsa Zoo & Living Museum

A Review of Reptile and Amphibian Enrichment at the Bronx Zoo

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*The author is a former employee of Bronx Zoo, now at Smithsonian National Zoological Park

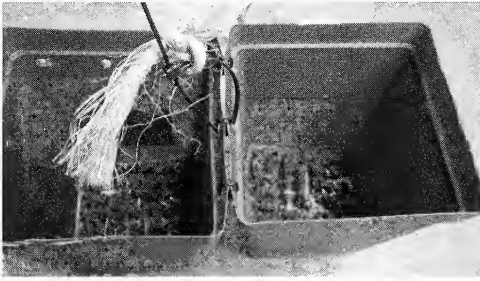
Environmental enrichment is both beneficial and stimulating to zoo animals. Enrichment elicits species-typical behaviors, increases activity and provides exercise, allows for control and/or choice over environments, and enhances overall well-being. There are many ways to enrich zoo animals; enrichment can be as simple as re-arranging an exhibit or as complicated as an in-depth training program. Regardless of the enrichment type, method, or purpose, environmental enrichment is critical to zoo animal welfare and is applicable across taxonomic groups.

Historically, reptiles and amphibians have been thought of as simple-minded, primitive creatures that do not benefit from enrichment. At the Bronx Zoo, we work to improve the lives of our animals through creative enrichment and training programs that are as diverse as the collection they serve. We are fortunate to have access to a large variety of food items for both the reptiles and amphibians in our collection. We provide a great diversity of food items for our insectivores by breeding several species of roaches, crickets, bean beetles, fruit flies, isopods, springtails and mealworms. We also receive a variety of prey items for our carnivorous species. We believe offering a diverse diet, as is typical in the wild, is one of the best means of enriching animals.

In addition to diet diversity we often provide our animals with delay feeders, scent trails, water bottles and an array of substrates and plants to create interactive enclosures. We also have operant conditioning programs with all of our crocodilians, select turtle species, our large monitors, and even some of our smaller lizard species. Last year we conducted a voluntary blood draw on our male Nile crocodile (*Crocodylus niloticus*) [see Augustine 2010], ultra-sounded a minimally restrained lace monitor (*Varinus varius*), and scent-trained a king cobra (*Ophiophagus hanna*) to shift.

Many of our collection animals are on automated lighting and misting systems. By altering these automated systems we are able to elicit natural behaviors. Additionally, we vary temperature to further mimic natural seasonal cycles. These types of changes often increase reproductive success in many species and are certainly a form of environmental enrichment. For example, following a cooler period, chuckwallas (*Sauromalus ater*) become increasingly active with the male, posturing for and chasing "his" females.

Recently, with the encouragement of the Bronx Zoo's new American Association of Zoo Keepers (BZAAZK) Chapter, we have begun experimenting further with enrichment to better engage our animals. A new type of feeder was created at BZAAZK's "Enrichment Bonanza" by combining rope, plastic planters and Astro-Turf®. This feeder was very appealing to our green tree monitors (*Varanus prasinus*). By adding some mealworms to the long Astro-Turf®, our female monitor not only had to climb on and into this swing apparatus, but also meticulously pick out her diet. She even managed to remove the square piece of Astro-Turf® with her mouth from the inside of the planter to gain better access to the prey. Monitor lizards have been shown to be capable of problem-solving (Manrod et al. 2008), and as such, it makes sense that they would benefit from complex enrichment designs. Although we enjoyed watching her "out-smart" our enrichment device, the Astro-Turf® has since been more securely attached to the inside of the planters.



Enrichment device for green tree monitors using super mealworms as prey.



An adaptation of the swinging enrichment device.

We look forward to continue enriching our animals in creative ways, and we cannot wait to get inspired at the next BZAAZK "Enrichment Bonanza". The BZAAZK has created an environment where keepers from all departments can collaborate on enrichment ideas. This type of open forum is just what a large institution, such as the Bronx Zoo, needs to keep ideas innovative.

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BHC Comments by Enrichment Options Co-Editor Julie Hartell-DeNardo:

Thanks Lauren, we appreciate you sharing your paper with the AAZK FORUM readers. You have made some great points regarding the value of enrichment to ensure the welfare of ALL taxonomic groups and applying that perspective to the reptiles at the Bronx Zoo. It is encouraging to hear about the diverse types of enrichment (dietary, environmental, food presentation, novel object, combinations, etc.) that you have successfully used with reptiles. I am particularly impressed with your local AAZK Chapter's involvement and development of enrichment – what a great Chapter! The groups "Enrichment Bonanza" creation is a very affordable, easy to build, creative idea. Your account of using this enrichment idea with the green tree monitor demonstrates the importance of using observations to readjust an idea for the species and create a successful and safe enrichment opportunity for the animals in your care. Thanks again Lauren!

Big Birds with Big Problems!

By

Sara Hallager, Biologist and Chair, AZA Ratite TAG
Smithsonian's National Zoo, Washington DC

The "Big Four": Ostrich (*Struthio camelus*), emu (*Dromaius novaehollandiae*), cassowary (*Casuarus sp.*) and rhea (*Rhea sp.*). These giants of the bird world have been present in zoos and collections for hundreds of years. They are beloved by visitors who expect to see a "big bird" when they visit a zoo. Ostrich rank among one of the most recognizable of all birds amongst visitors. Fifty-three percent of AZA-accredited zoos have at least one species of large ratite [Webster pers. comm.]. What many people don't realize [zoo staff and visitors] is that nearly every species of ratite is facing serious conservation challenges in the wild. This paper will describe the problems facing large ratites in the wild and what zoos are doing to help. Readers are reminded that the smallest ratite, kiwi, face serious conservation challenges as well.

Emu and ostrich are the most numerous ratites in U.S. zoos with populations of each species typically ranging from 200-300 individuals in any given year. The third most numerous ratite is the greater rhea (*Rhea americana*) (125-250 birds) followed by the southern cassowary (40-50 birds). The southern cassowary (*Casuarus casuarus*) population has never grown beyond 60 birds owing largely to the fact that birds must have dedicated space due to their aggressive nature which not all zoos are able to provide. Sadly, the lesser or Darwin's rhea (*Pterocnemia pennata*) which once numbered as high as 60 individuals is now gone from U.S. zoos. Kiwi are also ratites and one species, brown kiwi (*Apteryx mantelli*), is maintained in North American zoos.

Ratites get their name from the flat, raft (ratis) like structure of the sternum. Ratites (ostrich, emu, rhea, cassowary and kiwi) are the heaviest flightless birds in the world, with the exception of the relatively diminutive kiwi. Ratites are found throughout the southern continents and zones of the world: ostrich (native to Africa), three species of cassowary (native to Australia, Papua New Guinea and Indonesia), two species of rhea (native to South America), one species of emu (native to Australia) and five species of kiwi (native to New Zealand). The extinct moa (*Dinornithidae*) of New Zealand (13 species ranging in size from 20kg to 250kg) and the extinct elephant bird (*Aepyornithidae*) endemic to Madagascar (5-7 species ranging up to 400kg) were also ratites.

In the last 500 years, more than half of the recent species of large ratites have become extinct. This includes the moas, elephant birds and two species of emu. Today, several more species are under threat. Of the larger ratites, all three species of cassowary and both species of rhea are under increasing threats. The threats to lesser and greater rhea include over-hunting (primarily for skins) and clearing of farmland [del Hoyo, 1992]. Cassowaries face threats such as car strikes, predation of chicks by feral pigs, hunting and habitat loss [Latch, 2007]. The North African subspecies of ostrich (*Struthio c. camelus*) is now of critical conservation concern having declined through drought, desertification, habitat loss and over-hunting [Thiollay, 2006]. It's now extinct in 18 of its native range countries. Even the common emu [Fig. 1] has declined in parts of its range in recent years [Barrett et al., 2002].



Fig. 1. Common emu
Photo by Jessie Cohen

The AZA Ratite TAG – what are we doing?

The AZA Ratite TAG (Taxon Advisory Group) has three managed program species: greater rhea, southern cassowary and brown kiwi. Additionally, each species of ratite has its own Action Plan (www.aza.org). The TAG has an active

Education Team that is spearheading an ambitious plan to put ratite education and conservation in every zoo holding a ratite species.

The mission statement of the AZA Ratite Taxon Advisory Group is “To facilitate management of captive ratites in North American collections and participate in and support relevant conservation efforts”. To this end, several projects help achieve this goal. There are multiple ways for zoos exhibiting ratites to get involved with any of the *in situ* or *ex situ* projects described below, in addition to the promotion of ratite conservation at their zoo.

The Ostrich Recovery Program in Niger

In 2006, the ratite TAG became involved with the Sahara Conservation Fund (SCF) in the effort to save the North African ostrich (*Struthio camelus camelus*) and aid in its reintroduction to Niger [Fig 2]. SCF has been working since 2005 on ostrich conservation. Once widespread across Northern Africa, this uniquely adapted desert race of ostrich has rapidly declined during the 20th century and today only a handful are left in the wild. Though common in eastern and southern Africa, ostrich populations have declined perilously in western Africa over the past 50 years. Once widespread throughout western and northern Africa, *Struthio camelus camelus* is now extinct in Niger, Algeria, Mali, Burkina Faso, Tunisia, Morocco, Mauritania, Libya, Egypt and possibly Senegal (a small number survive in northern Senegal). Small populations exist in Cameroon, Eritrea, Nigeria and Central African Republic while the most sizeable populations reside in southern Chad and Sudan. The captive populations residing in Morocco and Tunisia are introduced birds of Chad origin.

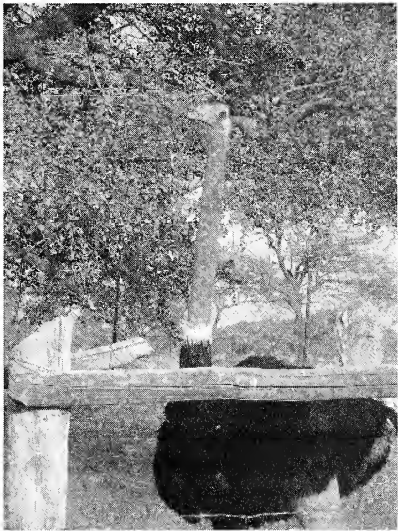


Fig. 2. Red-necked ostrich
Photo by Sara Hallager

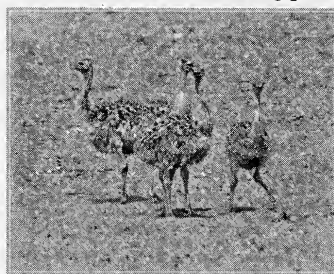
The long-term goal of the Ostrich Recovery Project in Niger is to reintroduce one or more secure, self-sustaining populations of Saharan ostrich back into the wild in Niger. The expected conservation benefits of the Niger Ostrich Recovery Project are many and include: the recovery and reintroduction of a highly-adapted desert race of ostrich; a model participatory, multi-partner conservation initiative; local skills and capacity development; establishment of a national ostrich breeding facility; improved environmental and conservation education and awareness; and catalytic support for other endangered species and environmental issues. The Ratite TAG has been advising SCF on many aspects of this program. The TAG has supplied an incubator, technical support for the rearing of chicks, as well as veterinary counseling. Nutritional support is ongoing as we work to develop a proper diet for the birds with the resources currently found in Niger. Quarterly updates are provided to SCF and the TAG continues to lobby for new facilities to participate in the recovery efforts. The TAG is committed to this project and we are proud to be working with our partners to bring this species back into the wild where it once roamed freely. Any zoo interested in learning more is urged to contact the author for more information.

The Adopt-an-Ostrich Program in Niger

The biggest bird on the planet is on the verge of going under in the silent tide of extinction that has been rolling across the Sahara. Once quite common across the Sahelo-Saharan zone, the Saharan race of the red-necked ostrich (*Struthio camelus camelus*), largest representative of its species, has been extirpated across 95% of its range. Within Niger, the bird has been deemed functionally extinct, with only a single male still rumored to exist in a remote valley within the Air Mountains to the north.

Zoos are uniquely positioned to do something about this crisis. Fortunately, there are still roughly 100 pure-bred *S. c. camelus* in small privately-held captive flocks scattered across Niger. Niger is an exceptionally poor country, but with some modest assistance the Nigeriens caring for ostrich can substantially improve the chances of these birds breeding successfully and rearing young. Given how productive ostrich can be, there is every reason to believe that with the right material and technical support, Niger can breed desert ostrich and return them to the wild in relatively short order.

The AZA Ratite TAG has been championing the recovery of the Saharan race of the red-necked ostrich in Niger since 2007 in partnership with Sahara Conservation Fund (SCF). Through SCF, we are part of a public-private partnership with the Republic of Niger and a consortium of private local breeders (CERNK) that was launched in an effort to breed some of these birds with an eye towards producing chicks for eventual reintroduction. Significant improvements to the ostrich breeding pens in Kellé, Niger were completed in 2010. We are now focusing on substantially improving the diet and promoting natural incubation until such time as we can develop the capacity in Niger to manage artificial incubation and chick-rearing operations [Fig. 3].



Let your Zoo's ostrich become an ambassador! This is a great opportunity for all of us to make a connection between our zoo ostrich and the conservation of the largest bird on the planet. The AZA Ratite TAG has developed its Adopt-an-Ostrich Program to support the acquisition, care and feeding of pure-bred Saharan ostrich in Niger; to help maintain the ostrich facilities; and to improve capacity for ostrich management. With your help, we can get Saharan ostrich back on the road to recovery in Niger.

Fig. 3. Red-necked ostrich chicks.
Photo by Kelly Bishop

The sum of \$500 will cover the care of one ostrich in Niger for a year. Our goal is 100% participation by all zoos holding ostrich, at whatever level each can contribute. We can provide each contributing Zoo with photos and background information to help them promote their ostrich conservation efforts to the public. Please consider making a pledge today and add your Zoo's voice to the growing chorus speaking for the conservation of the Sahara's Wildlife. Pledge forms are available from Sara Hallager, hallagers@si.edu.

The Use of EthoTrak to Study Cassowary Behavior in Captivity

In 2009 a workshop was held at White Oak Conservation Center, Yulee, FL. Twenty-six participants from 13 U.S. zoos, one European Zoo and the Australian Rainforest Foundation participated in the two-day cassowary workshop. Several areas of research, husbandry and potential collaborations were explored and an action plan was generated. A primary focus of the workshop was the establishment of a multi-institutional study to systematically and quantitatively observe captive cassowary behavior. Increased knowledge of captive cassowary behavior can help improve breeding success of captive birds and aid future conservation efforts. Due to space limitation and the species' solitary nature, few institutions house more than two cassowaries at any time. Therefore it is difficult for any one institution to conduct a study that could be considered representative of the species. A greater understanding of captive cassowary behavior requires cooperation across institutions. A software program (developed by the Chicago Zoological Society) called Colonel Stanley R. McNeil's EthoTrak Observation System, facilitates that effort. EthoTrak gathers behavioral information on a particular study animal using a Palm®-based program to collect behavioral data. Observers are trained on data collection and use an ethogram to collect data. Data is synched between the Palm® and the computer and then compiled into one central database. Information can then be compared across and between institutions to generate a variety of information on captive birds. Gaining a better understanding of cassowary behavior is a necessary first step towards improving the husbandry and management of captive cassowaries and designing future conservation efforts. What started as a U.S.-based study has now expanded to include cassowaries in several zoos in the United Kingdom,

The Netherlands and soon, Australia, making this the first international use of EthoTrak. Additional zoos in the U.S. holding cassowary are needed to expand the data set, so if your zoo holds cassowaries, please consider joining the study.

Cassowary Genetics of the AZA Population

The AZA Ratite TAG and the AZA cassowary studbook keeper/PMP coordinator have initiated a project “An Investigation into the Geographic Origins and Mean Kinship of the Southern Cassowary in North America” [Fig. 4]. The North American cassowary population has a high degree of unknown lineage and living birds are believed descended from just a few lines. The proposed project will use microsatellite analysis (a test to measure the relatedness of individuals and genetic diversity of a population) to determine the geographic origin (Australia, Indonesia, New Guinea) of the North American cassowary population. This is concurrent to exploring imports of birds from Australia. Prior to importing birds, assurance is needed that the U.S. population is of Australian descent. A better understanding of the mean kinship of the living population is also needed to allow for better genetic planning. Analysis of samples is being performed in the genetics laboratory at the Center for Conservation and Evolutionary Genetics, Smithsonian National Zoological Park. This is a critical project for the Ratite TAG. This project is endorsed by the Australian Rainforest Foundation (ARF). ARF is keen to establish a secure population of genetically-healthy southern cassowaries in the U.S. in the event of catastrophic devastation of birds in Australia. The EAZA ratite TAG is working on a similar project.



Fig. 4. Southern cassowary with chicks
Photo by Chad Comer

Greater Rhea (*Rhea americana*) Behavior Watch at the Smithsonian’s National Zoo

A greater understanding of greater rhea behavior [Fig. 5] is a necessary first step towards development and implementation of effective captive management practices. Few detailed descriptions of rhea behavior have been published, yet such manuscripts provide a valuable basis for quantitative study of behavior. Comparison of rhea behavior with that of other ratite species can highlight traits potentially shared by all or by specific groups of ratites, using the currently available behavioral information on all ratite species. Gaining a better understanding of greater rhea behavior in captivity is a necessary first step towards improving the husbandry and management of captive populations and for designing future conservation efforts that take into account all aspects of rhea life history and behavior. Bruning (1974) and Raikow (1968, 1969) studied the greater rhea in captivity and although their observations are considered the basis for understanding rhea behavior, their work occurred nearly 40 years ago and a complete ethogram was never produced. Sales et al. (2000) did observations on captive rheas in the late 90’s but his observations were limited to less than 60 hours. The general purpose of the greater rhea behavior watch at the National Zoo is to develop an ethogram for adult males,

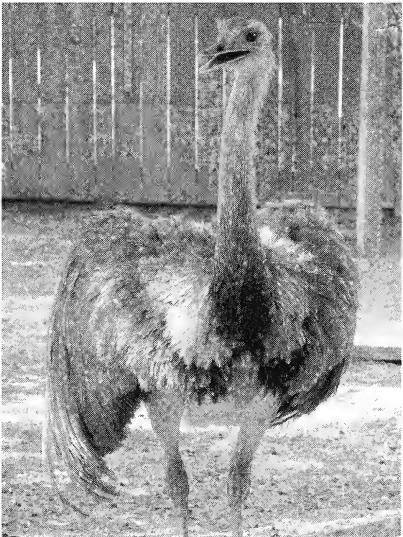


Fig. 5. Greater Rhea
Photo by Lisa Barker

adult females and chicks, obtain a diurnal time budget and determine the relationship between adult females and chicks. This is a multi-year behavioral study. The specific objectives of the greater rhea behavior watch are: 1) Develop an ethogram (activity budget) for adults; 2) Develop an ethogram for nesting males; 3) Develop an ethogram for chicks; 4) Determine how activities vary with the time of day and season; 5) Determine social interactions between males, females and chicks; 6) Determine how social interactions change on a seasonal basis; and 7) Determine the effect of crowd level on members of the flock. Additional zoos are being sought to increase the number of observations.

Ratite Enrichment

The Ratite TAG encourages all zoos housing ratites to engage in daily enrichment activities that stimulate the inherent curiosity of these birds. The TAG’s enrichment coordinator is currently developing enrichment guidelines for large ratites and the TAG is striving to ensure that enrichment is an important part of daily ratite husbandry. Please contact Dana Urbanski at dana.urbanski@nczoo.org for more information.

Ratite TAG Three-Year Education Plan

The Ratite TAG is fortunate to have an enthusiastic education team dedicated to educating zoo guests about ratites. Their ambitious three-year plan is outlined here.

Ratite TAG Education Action Plan	Education Action Plan Year 1
	Evaluation: are there any immediate needs that need the attention of the Education Team?
	Create a Public Perception Survey for Education Departments in institutions that house Cassowaries; Send out the Survey and get responses back for the next TAG Meeting
	Establish contact with Australian Rainforest Network and determine if there are any ways of partnering with other NGO’s.
	Create a Strategic Plan for Education Team assembled; this will involve the Education Team as well as the TAG leaders to get their feedback as to what we should be addressing using the SWOT (Strengths, Weaknesses, Opportunities, Threats) methods.
	Education Action Plan Year 2
	Assemble a set of graphic content and images that can be used by Facilities that house ratites. Make those available to any AZA Zoo that requests them.
	Assemble education materials that could be used by AZA zoo Education Departments for “The Big Four (ostrich, rhea, cassowary, emu).”
	Distribute these materials and make them available to AZA Zoos.
	Present a poster at AZA on the progress that the Team has made so far.
	Continue to expand the Public Perception Survey and begin to analyze the data.
	Redo the SWOT analysis with the team near the end of year two to see if there are any changing needs that must be addressed.
	Education Action Plan Year 3
	Appoint an Education point person for each of the “The Big 4” species.
	Send one of the Education Team members into the field for an “immersion” experience to better understand education needs outside of AZA facilities. After this experience, bring back to the Education Team what may need to be addressed in the field.
	Evaluation of Education materials and the Public Perception Survey; Is it making an impact?
	Begin to look at the remaining Ratite species and create graphics and materials to distribute to AZA facilities
	Repeat survey work for these species and see what the needs of facilities is for these species

Thirteen Things You Can Do Now to Help Ratites

1. Learn more about the ratites at your zoo and the threats they face in the wild
2. Join the AZA ratite listserv where you can ask questions about ratites and share your experiences with other ratite enthusiasts
3. Engage your guests about ratites and emphasize their uniqueness as a taxa
4. Read the AZA 2010 Ratite TAG Regional Collection Plan www.aza.org
5. Engage in daily enrichment activities for ratites

6. Go to <http://www.arf.net.au/> to learn about efforts of the Australian Rainforest Foundation to save the southern cassowary or go to <http://www.rainforestrescue.org.au/> to learn about work being done by Rainforest Rescue
7. Go to <http://www.saharaconservation.org/> to learn about the ostrich recovery program in Niger
8. If your zoo houses cassowary, join the EthoTrak study and help increase the study sample size
9. Strive to continually improve the husbandry and management of ratites at your zoo
10. Volunteer to help work on the Ratite TAG Animal Care Manuals. Manuals are being produced for ostrich/rhea/emu as well as cassowary and kiwi
11. Adopt an Ostrich and help save ostrich in Niger, Africa. Pledge forms are available from Sara Hallager at hallagers@si.edu
12. Talk with education specialists at your zoo about increasing the education messages about ratites at your zoo
13. Learn about the smallest of the ratites, the unique kiwi at <http://www.doc.govt.nz/conservation/native-animals/birds/land-birds/kiwi/kiwi/>

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CONSERVATION STATION



Reducing Your Carbon “Paw” Print

By Amanda Ista

AAZK National Conservation Committee

Milwaukee County Zoo

By now we all know how to live an environmentally-friendly, low carbon footprint lifestyle. We bring our own bags to the grocery, find a way to recycle just about anything, unplug every cord we see and have even switched to recycled toilet paper. But how many of us have looked into the environmental impact of all of the other members of our household? No, we are not talking about roommates who continuously forget to turn off lights or spouses who overlook recycling labels or even those pesky children who keep requiring new clothes and toys. Instead we are referring to the organisms most zookeepers tend to focus the majority of our attention on: OUR PETS! Whether you have just one hamster, or enough critters that you have seriously considered charging an entrance fee to come into your house, pets are an often overlooked source of some serious environmental impacts. Since pets are not as easy to get rid of as roommates, spouses and children, we would like to offer up some solutions and tips to ease your companions' green guilt (and yours).

Adopt from a shelter/rescue group – Books could be written about why it is so important that people adopt and debunking myths on the so-called “evils” of rescue, so we will just offer up the simple basics. Check out Petfinder.com.

- Three to four million dogs and cats are euthanatized each year while there is still enough demand for pets that keeps backyard breeders and puppy mills profiting (according to the U.S. Humane Society).
- You CAN get healthy, young, well-behaved pets of all kinds from the shelter! As long as you are honest with yourself about the reality of your situation and your pet's situation, the perfect match is out there waiting for you.
- You save two lives by adopting one – the life of the animal you adopt and the life of another animal that can be saved in its spot.
- Most animals are given to shelters because of “people problems,” not because of anything the animals have done. And besides, a pet with a behavior problem is just another training challenge for an ambitious zookeeper!
- You know where your pet is coming from – it's a rescue and you can expect the unexpected. Pet stores and Craigslist® posters mislead buyers into thinking their animals came from responsible breeders when in reality a large majority of their animals come from puppy mills, large-scale breeding operations and especially, in the fish and reptile world, from the wild.

Spay or neuter your pet – It makes for a healthier, happier pet that does not have to deal with raging hormones on a regular basis and the threat of cancer forming in any of those unnecessary parts.

Spaying and neutering also prevents overpopulation and unwanted babies, helping keep the number of unwanted pets needing homes down (see above). We all know best intentions of preventing unwanted pregnancies do not always pan out, especially when dogs will go to every length, height or depth to get to that “special” female. If you just have to have a baby animal fix though, consider fostering for a local shelter or rescue.

Protect native wildlife from your pets – Yes it is true, and I must admit I know this all too well from experience, cats kill native birds!! Even if your cats seem to stay in the yard or get along well with your pet birds and are well-fed, they will kill birds outside! The U.S. Fish and Wildlife Service reports that domestic cats kill 39 million birds annually – in Wisconsin alone! There are alternative ways to allow your cat access to the outdoors like window boxes, outdoor cat enclosures or leashes if your cat will withstand the indignities of them. Though cats take most of the guilt on this one, dogs aren’t innocent bystanders. Thousands of animals, especially babies, end up in wildlife rehabilitation each year from encounters with dogs. Keep your dogs on leashes when outside and make sure your yard is critter-free before letting the dogs out. Make sure to check for bunny nests too. Not only will this help wildlife, but it will also prevent that pesky emergency vet trip for embedded porcupine quills which we all hate!

Feed Green – We all know fresh food is the healthiest for humans yet most of us feed over-processed dry food with poor quality ingredients to our pets. Raw food is generally the best option and the most environmentally-friendly, though it may not be a viable option for everyone. Do your homework with your pet’s food and find the highest quality food (those without fillers like corn for cats and dogs) and look for foods made locally. Another benefit to feeding better quality food means you feed less, therefore your pet produces less waste needing disposal.

Green what is coming out – Domestic dogs and cats create ten million tons of waste per year in the United States alone, not to mention waste created by pocket pets, reptiles and others. Most of our pets’ poop winds up in a landfill where it exists virtually forever, preserved in plastic bags.

- Using biodegradable poop bags and garbage bags is a step in the right direction.
- Even better is to compost your pets’ waste. Pet waste cannot go in a normal compost pile because it does not heat up to a high enough temperature to kill all the pathogens that may be present, but you can make a special compost bin buried in your yard just for pet waste. There are many options currently available as well as home-made options. Check the Internet for more options.
- Examine your cat’s defecation situation. Clumping clay litter (the most commonly used litter) should be avoided. Not only is clay strip-mined but the clay dust is thought to be carcinogenic and clumping agents can poison your cat through chronic ingestion from normal grooming behaviors. There are many eco-friendly cat litter options now available but check with your local sewage treatment plant if you decide to use flushable litter. If they do not treat the water for toxoplasmosis, flushing cat litter could release the parasite into the water system.

Advocate for correct pet choices and care – Zookeepers are in a great position to share what we know about environmentally-responsible pet care and choices. Work with your zoo to provide education to your visitors about good pet choices, avoiding exotic and fad pets, spaying/neutering and adopting. AZA also provides a great resource in the form of a pamphlet called “Why Wild Animals Don’t Make Good Pets” (located at http://www.aza.org/uploadedFiles/Education/Resources_for_Educators/wadnmgp-brochure.pdf). Also, many zoos partner with local shelters and rescues to do special adoption days at the zoo. You can also talk with your zoo about supporting local, sustainable pet food stores for your zoo’s needs for high quality food or enrichment supplies. Volunteer at local shelters and rescues to help get the word out about the need for responsible pet choices and to help take care of those animals waiting for homes.

As zookeepers, we are looked at as experts in animal care for both exotics and domestics. How many times have you gotten questions from friends or family members about dog and cat behavior issues? Being in this position, it is our responsibility to learn and share information on environmentally-responsible pet care practices with those who look to us for information.

References: www.treehugger.com
www.humanesociety.org
www.aza.org/kids-and-families
www.petfinder.com



Jersey, the boxer and Delilah, the green-cheeked conure, both rescued from shelters, interact.

Photo by Amanda Ista

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Conservation/Legislative Update

Column Coordinators: *Becky Richendollar, Columbia, SC*
and *Greg McKinney, Philadelphia, PA*

This month's column was put together by
Column Co-Coordinator Becky Richendollar



Study Shows Birds Use Smell to Identify Potential Mates

A recent study conducted at the Brookfield Zoo provides evidence that birds may have a more developed sense of smell than most people think. The study, conducted by Heather Coffin of the University of Chicago, involved a group of 12 Humboldt penguins (*Spheniscus humboldti*) at the zoo.

During the study, the penguins were given access to the odors of unfamiliar penguins that they were related to, and unfamiliar penguins that they were not related to. The penguins spent more time investigating the smell of the penguins they were not related to, seemingly very curious about the scent.

Coffin believes that this strong sense of smell functions to help avoid inbreeding. “Smell is likely the primary mechanism for kin recognition to avoid inbreeding within the colony,” she said. This study is the first to show that birds use their sense of smell to possibly prevent inbreeding. However, earlier studies showed that birds use their sense of smell for other uses such as finding a home and food. Studies such as these interest animal behaviorists because birds were long thought to have an underdeveloped sense of smell. Source: *Chicago Sun Times, September 22, 2011*

Australia Debates Koala Listing

Australia is struggling with the decision to list koalas (*Phascolarctos cinereus*) as a threatened or endangered species. Although no reliable census data is available, and estimates range widely from 35,000 to 100,000, koalas have declined considerably in some areas on the continent. In September, Australia’s Senate Standing Committees on Environment and Communications released a report with recommendations for helping to protect the iconic animal. One such suggestion is the creation of tunnels under roadways so that the animals can get across the road without being killed by vehicles. In the state of Queensland alone, 4,500 koalas were killed by cars between 1997 and 2009.



Should Koalas be listed as a threatened species?

Photo by Liz Romer, ASZK

Traffic is only one danger that faces the koalas. Other threats to the population include forest fires, drought, dramatic heat increases from climate change, attacks from domestic animals, habitat loss, and a deadly AIDS-like retrovirus. Considering all these factors, the Committee also suggested spending more money on research into vaccines for the koala, as well as setting aside conserved areas for koala habitat.

Environment Minister Tony Burke said, “koalas are an iconic Australian animal. They hold a special place in the hearts of Australians.” While this may be true, not everyone agrees with the sentiment. Many Australian businesses are concerned that the emphasis on protecting koalas could cost “tens of thousands” construction and mining jobs. Burke intends to make a decision about listing the koala as a threatened species under the nation’s Environment Protection and Biodiversity Conservation Act before the end of the year. Source: *Scientific American, September 22, 2011*

Video Shows Fish Using “Forward Thinking”

A new video shows never before seen footage of a fish using tools. In the video, an orange-dotted tuskfish (*Choerodon anchoago*) is seen digging a clam out of the sand with his fin. The fish is then seen swimming until it comes upon a large rock. The tuskfish then takes the clam and repeatedly throws the clam against the rock to crush it. This is a common use of tools in the animal world, and it has been seen before in fish species. However, this is the first time such behavior has been recorded on video.

The video footage, which was shot off the coast of Palau, is described in the journal *Coral Reefs*. The videographer was Giacomo Bernardi, a professor of ecology and evolutionary biology at the University of California, Santa Cruz. Bernardi said, “What the movie shows is very interesting. The animal excavates sand to get the shell out, then swims for a long time to find an appropriate area where it can crack the shell. It requires a lot of forward thinking, because there are a number of steps involved. For a fish, it’s a pretty big deal.”

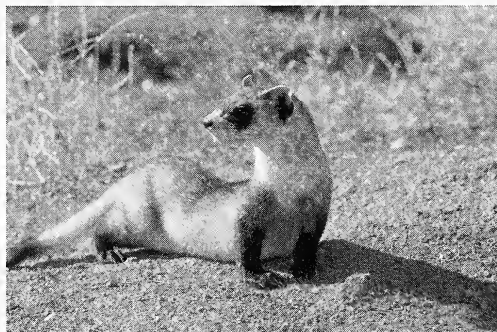
Tool use was once thought to be limited to chimpanzees but several species including various primates, dolphins, elephants, and birds have been documented using tools. Source: *Discovery News*, September 29, 2011

Black-footed Ferrets Head to Boot Camp

A group of 26 Black-footed ferrets (*Mustela nigripes*) from the National Zoo’s Conservation Center headed to Colorado in October for “Boot Camp” at the National Black-Footed Ferret Conservation Center. Black-footed ferrets are considered one of our field’s most celebrated success stories. In 1985 only 24 of the animals remained in the wild. Zoos made the decision to capture the animals and breed them in captivity.

Over the last 26 years zoos in Louisville, Toronto, Phoenix, Colorado Springs, and the Smithsonian’s National Zoo have worked with the U.S. Fish and Wildlife Service to breed the endangered animals. The efforts have paid off. More than 7,000 Black-footed ferrets have been released since 1991.

Before being released, the animals must spend at least 30 days preparing for life in the wild. The animals are exposed to underground burrows and prairie dog tunnels, and given the chance to hunt and kill live prey. For the first time, they hear predators such as coyotes in the distance and see hawks flying overhead. Kits are paired with their mothers to learn to hunt. This time at the Center gives the animals a ten times higher chance of surviving once they are released. Source: *Washington Post*, September 28, 2011.



Black Footed Ferret
Photo by USFWS

Captive Chimpanzees May Be Reclassified

In September, the U.S. Fish and Wildlife Service announced that it would conduct a status review to determine if captive chimpanzees (*Pan troglodytes*) should be reclassified from “threatened” to “endangered” under the Endangered Species Act. Wild chimpanzees were declared “endangered” in 1990, but apes in captivity have not been protected because of the “captive-bred wildlife exception.” This exception means that “people who register with the U.S. Fish and Wildlife Service can legally export, re-import, sell, and take their captive-bred apes as long as those activities enhance the

survival of the species,” according to the Michigan State University College of Law’s Animal Legal and Historical Center.

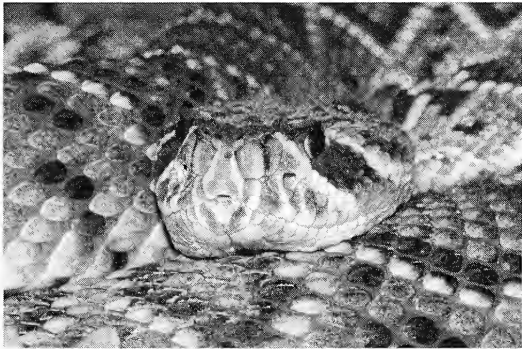
Chimpanzees have long been used for medical research and there are nearly 1,000 medical research chimpanzees in the U.S. The United States and the African nation of Gabon are currently the only countries that use chimpanzees in medical research. Earlier this year, Representative Roscoe Bartlett from Maryland introduced the Great Ape Protection and Cost Savings Act of 2011, which would prohibit invasive research on great apes and not allow the use of federal funds in support of medical research on apes.

In addition to the chimpanzees in medical facilities, there is a reported 260 chimpanzees employed by the entertainment industry for use in commercials and movies. A study published earlier this year found that the use of chimps in movies, commercials, and greeting cards has diminished the public’s perception that the species is endangered. However, extinction has been predicted for the species in as few as 10 to 50 years.

The status review being conducted by FWS is just the first step and its purpose is to gather information. Fish and Wildlife officials say it is too early to tell what would change if the status of captive apes was changed to “endangered”. Source: *Scientific American*, September 7, 2011

Groups Ask FWS to Consider Eastern Diamondback Rattlesnake

In September, conservation groups petitioned the U.S. Fish and Wildlife Service to examine whether or not the eastern diamondback rattlesnake (*Crotalus adamanteus*) warrants a listing as “threatened” under the Endangered Species Act. The snake was once abundant in the southeastern United States, but only two to three percent of the animal’s original habitat remains. The eastern diamondback population is also declining due to humans who kill the snakes for their skins and meat each year without any harvest limits. In addition, “Rattlesnake Roundups” are held each year in Alabama and Georgia. These “festivals” encourage hunters to kill the largest eastern diamondback rattlesnakes they can find. The animals are then exhibited and slaughtered.



Eastern Diamondback Rattlesnake
Photo by Robin Winkelman

“Survival of these snakes in large part depends on whether people continue to persecute them or instead choose to allow these amazing creatures to share the land with us,” said Bill Matturro of Protect All Living Species. “As a farmer and owner of wooded land, all living things on my land - including eastern diamondback rattlesnakes - are both respected and protected.”

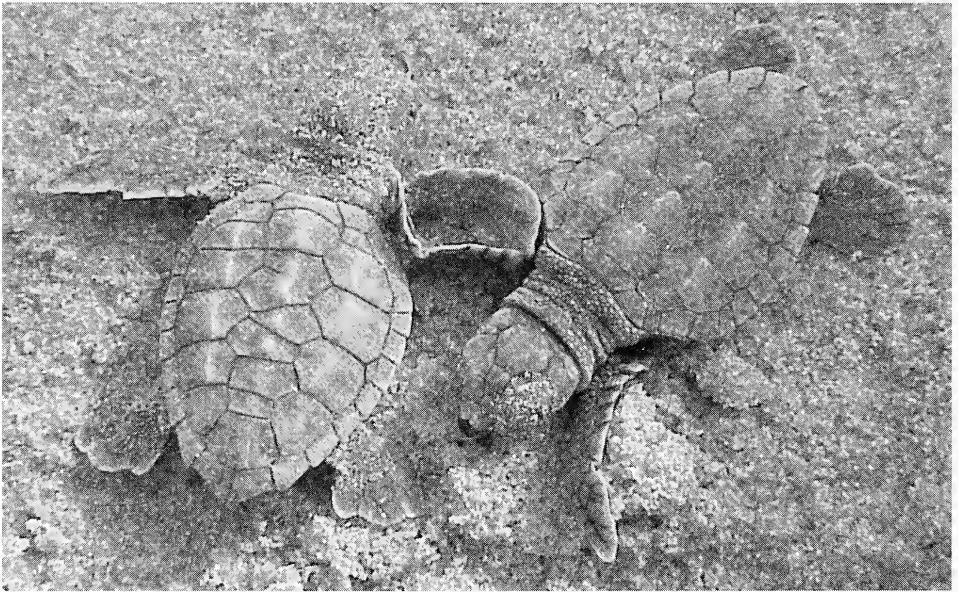
The Center for Biological Diversity recently signed a historic agreement with the U.S. Fish and Wildlife Service under which the agency agreed to make protection decisions for hundreds of species over the next several years. Although the agency is normally required to respond to a petition within one year, it is likely that any decision on the diamondback will be delayed as the Service works through the backlog of species needing protection and addressed in the agreement. Source: *The Center for North American Herpetology*, September 8, 2011

Loggerhead Sea Turtles Receive Endangered Status

In September, the Obama administration made the decision to list the North Pacific loggerhead sea turtle (*Caretta caretta*) as endangered under the Endangered Species Act. Although the species was listed as threatened in 1978, the population has continued to decline because of fisheries, climate change, and marine pollution. The decision comes in response to petitions filed in 2007. The listing does not include the Northwest Atlantic loggerhead sea turtles despite the fact that an almost 40 percent decline in nesting has been seen since 1998.

Now that Pacific loggerheads are endangered, significant threats such as longline and gillnet fisheries will be subject to increased scrutiny and may need restrictions to reduce their deadly impacts. North Pacific loggerhead sea turtles nest in Japan, but spend most of their lives along the coast of Mexico and Southern California. Swordfish boats from Hawaii regularly hook and drown loggerhead sea turtles on millions of longline hooks.

While critical habitat is not currently designated for loggerheads, this rule triggers its identification — an important step toward achieving improved protections for key nesting beaches and migratory and feeding habitat in the ocean. Species with protected critical habitat are twice as likely to recover as those without. Source: *Fish and Wildlife Service, September 21, 2011*



Loggerhead Sea Turtles (*Caretta caretta*)

Photo by USFWS

California Bans Shark Finning

California joined three other states in banning the sale or possession of shark fins. Faced with a nearly 90% drop in shark populations in recent years—along with the fact that shark fins are obtained by skinning them off live sharks that are then left to die in the ocean—California Gov. Jerry Brown recently signed a statewide ban on the sale and possession of shark fins. The fins are the main ingredient in shark fin soup, a prized delicacy in some Asian cultures. But advocates of the ban have pointed out that the method of obtaining the fins is particularly cruel. “The practice of cutting the fins off of living sharks and dumping them back in the ocean is not only cruel, but it harms the health of our oceans,” said Brown in a statement. “Researchers estimate that some shark populations have declined by more than 90%, portending grave threats to our environment and commercial fishing. In the interest of future generations, I have signed this bill.” California joins Washington, Oregon, Hawaii and Guam, which have all enacted bans. Source: www.takepart.com 10/14/11

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